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HOW STRONG IS AMERICA?

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HOW STRONG IS JAPAN?
(*Ready early* 1942)

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HOW STRONG IS AMERICA?

BY

NOEL BARBER

WITH MAPS AND DIAGRAMS BY
GEOFFREY DICKESON

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NOTE

THIS book sets out to show, in two parts, the strength of America. The first part deals with production split into various categories, with figures (and sometimes estimates) of the amount of America's production which is being turned over to the British Empire.

The second part deals with America's fighting forces as they stand today and the strength they are likely to reach within the next six months.

I should like sincerely to thank Betty Rosamond and Abbie Chisholm for the valuable help they have both given me in research.

NOEL BARBER

CHELSEA STUDIO, S.W.6
November 15, 1941

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BOOK ONE

The Fighting Factories

CHAPTER I

THE BATTLE OF PRODUCTION

In the workshops, the factories, the steel mills of America, the weapons of war are being forged for Britain. In the far corners of the Empire, aeroplanes with red, white, and blue rings are taking to the skies. They were built in America. On the hot, windswept sands of Libya, tanks are rattling forward to the tune of machine-gun fire. They were born on America's endless assembly belts. On the seven seas, cargo boats are transporting food, ammunition, medical supplies—all from America.

Aid for Britain—a big subject, a subject of vague promises and speculations, difficult to probe. But the strength of the United States of America is absolutely vital to each and every one of us. So in this book I have analysed that strength, and given the amplified answer to one simple question: How much can America help the British Empire in this struggle?

There are two broad ways in which she can aid us. The first is by helping us with *materials*, as she is doing; the second is by helping us with *manpower*.

The first part of this book deals with materials. The second part deals with the actual armed strength of the United States, her manpower, and her ability to use it in time of war. But before that, we must analyse the subject which affects us most at the present time—material aid; materials for the prosecution of the war which America has sent, is sending, and will send in the future; though before we go any further, one or two points should be made clear in this preliminary chapter, which aims to give you a general background to the raw materials and production capacity of the United States.

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America is at the moment only working to a part of her capacity. True, her factories and shipyards and workshops are expanding rapidly. But they *could*—and I think *will have to*—expand far more before Britain can win this war.

That does not mean that there is no answer to the critics who jeer when statesmen on both sides of the Atlantic promise a vast flow of arms "in the next six months"—always in the next six months. Well, those six months and more have passed since the first promises were made. Have the hopes been realised? Is the stream growing wider? Is the flood on its way?

Of course it is. The British Empire today is receiving great supplies of arms of all kinds. America is sending them over, shipload after shipload as she draws nearer to war. The figures in this book—all of which have been supplied to me by the highest authorities in this country—will prove the astonishing aid which has already been sent to this country and the British Empire. But even so, it does only represent a fraction of what America *could* send us; and that brings me to another early point which we had better clear up right away—the answer to the question: Would America's entry into the war help Britain, or hinder the flow of aid?

There are many who argue that America's army and air force are so far away and so small that they are of no use, and we are therefore better off if America does not have to make arms for her own forces on a war-time footing. They say, in effect "We will look after the manpower problem. Let America supply us with the tools."

They forget one very serious point. They forget that America *is still at peace*. All our aid is coming from a country unprepared for war, a country in which a large percentage of the people are quite uninterested in war—a country still concerned with bright lights and beefsteaks, chromium-plated taps, pineapple chunks in tins, lipstick and lingerie, clothes and cosmetics.

The very reason for America's limited aid is that she is still at peace. At present, helping Britain is rather like helping the poor country cousin who has got into a fix—and it must not interfere too much with normal living. I know America is not at *total* peace; there is a definite shortage of some civilian commodities because of aid to Britain and national defence,

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but the deviation of peaceful production to war-time production is nothing compared with what it could be. So vast, so greatly organised is America that she can afford to look after both interests—*to a certain degree.*

Once, however, let America be involved in total war, and the whole young tree of production shoots to full stature. The hundreds of thousands of branches grow and grow until they cover every need of modern war.

Once let America go to war and her organised industry will be sufficient to equip both her own needs and ours too. More than enough. Working twenty-four hours a day, we could outbuild and outclass the dictators in every single branch of the armaments industry. We could build ten tanks, ten aeroplanes, a hundred guns, a thousand shells for every one of theirs.

Make no mistake about that. America at war would make the greatest difference imaginable to the productive capacity of the Democracies.

And now, before we go on to chapters dealing with specific categories of production, let us take a look at America's natural resources, and her general ability to turn those resources into sheets of steel, piles of bullets, hulls of ships, streams of shells, crates of tanks, squadrons of aeroplanes.

There are six basic materials for modern industry. Coal, iron, copper, cotton, oil, rubber. How is America supplied for these? She produces a third of the world's copper, a third of its coal, more than a third of its iron, half of its cotton, and sixty per cent. of its oil. Only in rubber is she dependent on outside supplies. There, fortunately, the British and Dutch Empires are supreme producers with almost a monopoly of the world's supply.

What do these figures amount to, without too much harping on the inevitable " million tons " which mean more or less nothing to the layman? Take copper. How much copper does America's third of the world's supply amount to? In 1940, she produced 954,000 tons, worth £49,000,000—copper at the rate of 109 tons an hour. When you consider that there is about half a pound of copper in an average, medium-sized shell, it means that *in one hour* the United States can produce enough copper for nearly half a million shells.

When you come to oil, the figure is even more striking.

America's peace-time production of oil is 168 million tons a year. Bringing this down to an everyday level, it means that *in one hour* America produces enough fuel for us to send 3000 Flying Fortresses to Berlin and back ![1]

It *is* staggering, this abundance of the raw materials of America, and she is just as well placed in many other important needs of modern production.

In recent years, the United States have produced between ten and twenty per cent. of the world's bauxite, mercury, magnesite, gold, wool, soya ; between twenty and thirty per cent. of the world's supply of lead, silver, vanadium, and natural phosphates, while they produce eighty per cent. of the world's sulphur, and more than ninety per cent. of its molybdenum, which is used for toughening steel. America's food position is unique, as you can see from the special chapter dealing with this subject. She has six hundred million acres of timber, and to transport all these goods, she has three million miles of road and more than a quarter of a million miles of railways.

In steel, she is remarkably well placed. Her 1941 production figure was estimated to be 65¼ million tons—actually in the first six months of 1941, she produced 40,000,000 tons, all made from her own raw materials of iron ore, scrap and coke. That is twice as much as the Germans can produce while we ourselves, in peace time, produce a mere 13,000,000 tons.

America is not, of course, self-sufficient in everything. But where she lacks, the Empire can usually make up the deficit. If we cannot help, then large supplies can come from South America, and there is no danger of the United States losing South America's raw materials. With most of Europe's markets either closed or severely restricted, the Southern countries are only too anxious to find a customer.

Rubber is a big problem. Its uses in modern armaments production are many and vital. Even in peace time, America imported nearly half the world's supply — practically all of it from the Far East. Here you have the difficulty of transport—just the one problem we are anxious to avoid, particularly

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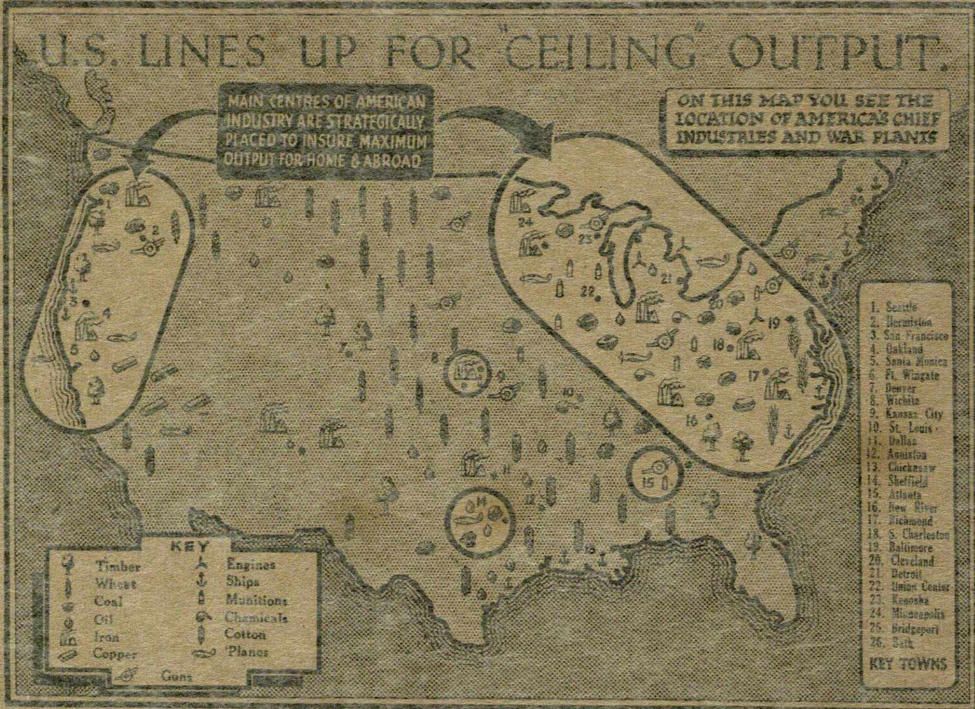
[1] This figure is arrived at as follows : there are about 300 gallons to a ton of oil. A Flying Fortress (with four 1200 h.p. engines) uses fuel at the rate of half a pint per horsepower per hour on its six-hour trip to Berlin and back.

U.S. LINES UP FOR "CEILING" OUTPUT.



MAIN CENTRES OF AMERICAN INDUSTRY ARE STRATEGICALLY PLACED TO INSURE MAXIMUM OUTPUT FOR HOME & ABROAD

ON THIS MAP YOU SEE THE LOCATION OF AMERICA'S CHIEF INDUSTRIES AND WAR PLANTS

1. Seattle
2. Hermiston
3. San Francisco
4. Oakland
5. Santa Monica
6. Ft. Wingate
7. Denver
8. Wichita
9. Kansas City
10. St. Louis
11. Dallas
12. Anniston
13. Chickasaw
14. Sheffield
15. Atlanta
16. New River
17. Richmond
18. S. Charleston
19. Baltimore
20. Cleveland
21. Detroit
22. Union Center
23. Kenosha
24. Minneapolis
25. Bridgeport
26. Bath

KEY TOWNS

if America goes to war. We have a big enough problem in the transport of finished goods *from* America to the Empire without the additional difficulty of transporting raw materials *to* the workshops of democracy.

Another important war material in which America lags behind (so do we) is aluminium, produced from bauxite. In 1939, she produced 163,500 tons to Germany's 200,000 tons. Her 1940 output was about equal to Germany's 1939 figure. Though later figures are not available, America is rapidly bridging the gap, and by the middle of 1942, she should be producing 350,000 tons a year—much more than Germany. The immense value of aluminium in aircraft production can be gauged from the fact that there are about 4500 lb. of this alloy in the average bomber.

The lack of aluminium is not, fortunately, owing to lack of bauxite, the raw material. Apart from her own bauxite, America can get vast quantities from Dutch Guiana and the Dutch East Indies—though I don't think she needs those supplies yet. The shortage has been due simply to the fact that the processing of aluminium is a fairly complicated business, and America has, in the past, been content to produce just as much as she needed, and no more. The extra production entails a certain amount of industrial reorganisation.

America is also deficient in certain alloy metals which give the necessary toughness to steel—one of the chief of these is manganese. In 1940, America produced less than four per cent. of her requirements, but here again, the British Empire steps in—India, the Gold Coast, South Africa, Malaya, have enough to cover the bulk of the needs of both Britain and the United States. Brazil and Cuba help too. Indeed, America's own increased production, plus that of Latin America, should cover half her needs, even with her expanded armaments programme. And if by any chance supplies from other countries became difficult, then America has eighteen months' stocks in hand—and you can be sure she will not touch this unless all other sources fail.

She is also short of nickel, but here Canada, with ninety per cent. of the world's supply (and no sea transport problem) can easily help her. Tin is another metal in which America needs outside help, relying mainly on the Dutch East Indies and Malaya. But it must be remembered that tin is *not* one of the key metals of the armaments industry.

I have given these figures in some detail because I think it is essential to have a fairly thorough background to raw materials before we can get right down to the solid business of finding out just how many tanks America can produce in a given space of time, or how long it takes her to turn out a completed merchant ship. That will come. Helped by Dickeson's graphs and maps, we shall be able to see just how America's industrial army is mobilising, where it is fighting, and what its results are now and are likely to be in the future.

Now we turn to the mobilisation of industry—to the ability of the American of today to utilise the wealth of raw materials with which he is blessed. Here we must get still more general background—but this time of machines, of great clanking factories, of endless waterfalls producing power which the American citizen is harnessing, of transport, of building, of manpower, of productive floor space.

How is America standing up to the sudden transition from total peace to undeclared war? We know her factories have enormous capabilities, but how big? How speedy? How valuable? And as for the planes and the guns and the tanks—*when*? When are they coming?

It is quite obvious that the volume of aid to Britain will be the determining factor in this war. But it will be more than that. It will not only tip the scales in our favour, but it will also have a very important effect on the *time* of victory. Put bluntly, the quicker the Americans get down to the job, the sooner the job will be over. The sooner those planes and guns and tanks arrive, the sooner we can settle down to peace again.

The difference which American aid makes is the difference between an offensive and a defensive war. Without it we hang on grimly, by the skin of our teeth, fighting against desperate odds. With it, the time must come when we take the offensive. Indeed, that time has already arrived in aerial warfare. In the ate summer of 1940, with our air force so limited that we were iterally taking fighter machines straight from the factories to advanced airfields, there to fly in combat the same day, we had o fight a defensive battle. It turned out to be a glorious victory.

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But, however magnificent, wars cannot be won by victories like those.

Just a year later—a year to the night after the first bloody assault on London—we could afford to send over such a strength of bombers that we lost twenty in the biggest raid Berlin has ever had. Our raids have increased in intensity all along the line—thanks to American aid, not only in actual planes but in other categories, so that we have been able to divert certain of our factories to plane building.

But what, in general terms, is this American industrial machine really capable of? Is it really possible that American aid can make a difference so great that without it the war would drag on, whereas with it the hammer blows will force a decision years earlier?

The first astonishing thing to realise is this. In all cases where it has been possible to compare the output of an American with that of a British workman, figures show that the American actually produces *four times as much as the Briton.* Many theories have been advanced for this staggering fact. I think one of the simplest basic reasons is that America has far more capital locked up in machinery and the means of production than Britain. In the boom years American incomes were so high that people saved great amounts of money. And the money they saved was invested in railways, great engineering and power plants, heavy industries.

With that money, those industries bought more and more machinery; it was used for research into improved methods; it meant expanded production, whether of freight cars, sheets of steel, or electrical units. All this has, in its turn, meant a greater progress and greater demand than in Europe.

America has a mass production technique far in advance of any other country in the world, but here, right at the outset, one point must be made, even though it has been made frequently in public during the past year. You can't make aeroplanes without machines to make them—and you can't make those machines without other machines. Neither can you build planes without a factory; and you can't build that factory without bricks and mortar, timber, concrete, power, steel transport, labour. And those extra bricks can't be built withou extra kilns, and you can't get the timber without extra me and machines—and so the list can go on, backwards, indefinitely. Fortunately, as figures will show later on, the preliminary reorganisation is now beginning to show definite results. I have obtained many striking figures of aid that has actually reached the Empire. But never, never underestimate the initial difficulties. Never think that it is a comparatively simple business to turn over a gigantic car plant to the manufacture of aeroplanes.

Let us take, as an example, the sudden onrush of orders that flooded the American market after the Dunkirk crisis. Britain stood not only alone but—entirely through her own fault—unarmed. Naked aggression had left us pretty well naked ourselves. We had just about the clothes we stood up in. That was all.

So we turned to the United States. America had already taken its first serious step in industrial mobilisation by forming the National Defence Advisory Commission, which had given out quite a large number of arms contracts, though the question of speedy deliveries had not been considered very important. Then France fell. The British Purchasing Commission started to farm out a vast number of orders, while America set out to re-arm herself. Between that nearly fatal June 1940 and September of the same year, Britain and America between them gave out contracts for the following astonishing collection of lethal weapons:

50,000 aeroplanes,
130,000 aeroplane engines,
17,000 heavy guns,
25,000 light guns,
13,000 trench mortars,
33,000,000 shells,
9,200 tanks,
300,000 machine guns,
400,000 automatic rifles,
380 naval ships,
200 merchant ships,

together with 210 camps, 40 government factories, uniforms and other equipment for America's own army.

The percentage of these orders which we have already received will be dealt with in separate chapters, but as you can see, they represented an extraordinary mass of material. And

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what is more important—the time when those orders were placed means that the autumn of 1940, *not* September 1939, was the real time that America's industrial giants entered the war.

Now, have you any conception of the length of time required to produce those arms orders? Before the mobilisation of industry changed figures, America, with its population of nearly 132,000,000, had 1,166,000 men in the iron and steel industry (excluding machines), 955,000 men engaged on machine work, 694,000 men on forestry products, and nearly a million in food and kindred products. Those figures look large. Yet those orders which I gave you—and there have been many more since—take 18,000 million man-hours of labour to complete. Or, to put it another way, four and a half million men, working a 40-hour week, would take two years to make everything in the list—and that is if the preliminary organisation were ready for them. Before they could ever consider making them, they would have to consider getting machine tools, building factories, finding materials.

Machine tools, indeed, are a very big problem, for without them we should be back to hand-made chariots and hand-made boats with which to wage war. These vital, intricate machines are the fingers of production—the hands that lay hold of the sheets of metal and twist them into exact shapes and sizes. They are the robots of industry, and their speed and precision must be flawless. Before the mass production of any arms can even be contemplated with assurance, the machine tools must be considered. Battleships and bullets, gasometers and gas-masks—there are machine tools for all of them, working if necessary to 2/10,000ths of an inch; compare that with the thickness of the hair on your head—3/1000ths of an inch. It means that a machine tool can cut to a fifteenth of a hair's breadth!

Fortunately, in this branch of industry—a very odd branch, because it only does well if industry as a whole is expanding—America has done remarkably well. In peace time, she never produced more than £50,000,000 worth of tools a year. In 1940, she produced £90,000,000 worth, and in 1941, her estimated figure was £200,000,000—figures for the first eight months of the year indicated clearly that this gigantic total would be reached.

We are more lucky than we realise in America's machine

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tool capacity. Those orders which I listed above are on the way—thanks to machine tools. Indeed, the output of machine tools is the main reason why I can say—and say definitely—that the flood of American production has actually started. From the figures which I have been permitted to see, there is no question about this. There are still bottlenecks that are worrying, but they are being overcome.

It has taken just over a year—working at nothing like her full capacity, and still dealing adequately with peace-time needs—to get the factories looking shipshape and the machine tools ready on such a large scale that the armaments ordered in that group which I listed above, can be turned out swiftly and in ever-increasing quantities.

Actually, in the first two years of war, Great Britain and the Empire *received* aid from the United States to the value of £132,000,000. I cannot tell you how this figure is made up (a lot of it was old material), but I can give you an idea of its value in this way. For £132,000,000 Britain could buy :

4 battleships,
4 cruisers,
8 destroyers,
30 submarines,
100 Flying Fortresses,
800 fighters,
800 tanks,

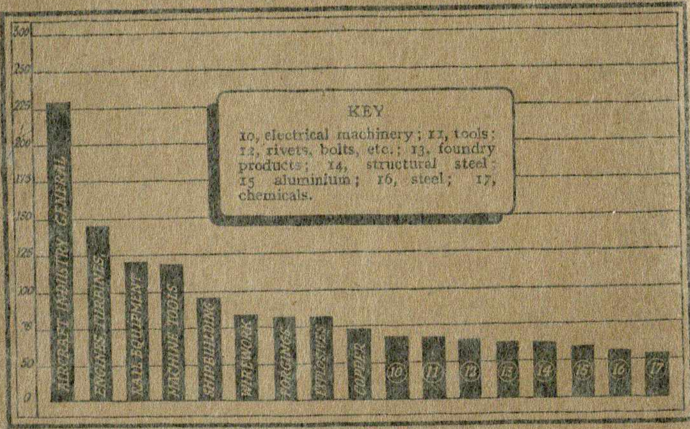
and still have about £20,000,000 left over for odds and ends.

You don't, perhaps, realise the arms *are* coming—because America hasn't suddenly got all the factories working at full production where there were no factories before. Perhaps, ome months ago, men completed a quarter or a fifth of a factory, nd started production on a small scale, adding to it as the actory grew. That has been happening all over the country.

Now at the end of 1941, the preliminaries have just about een completed. The first process of producing the tools, of rganising production, of building factories, is nearly over. It ill, at the very latest, be quite complete by the spring of 1942, nd then—then, of course, America's industrial capacity will e ready and waiting for further unlimited expansion in almost ll the needs of modern warfare.

If, for instance, America at peace, working a normal 40-hour week, can turn out those arms in two years, she could if she went to war—*with all those factories already built*—turn out far more arms in the same factories simply by increasing the shifts. She is already working more than one shift in many branches of the armaments industry now.

But please do not underestimate the preliminaries and the industrial reorganisation needed. From the Atlantic to the Pacific a great change has been sweeping across the United States. The greatest industrial system in the world has been changing over to war production. If you think that the interim phase has been too slow, think of the preliminaries involved before the country could get down to the actual job of turning out arms.



KEY

10, electrical machinery; 11, tools; 12, rivets, bolts, etc.; 13, foundry products; 14, structural steel; 15 aluminium; 16, steel; 17, chemicals.

Percentage Expansion Increases in Various Industries between the Outbreak of War and January 1941—before the United States Production Machine had really warmed up.

Up to March 1941, Britain and America together were responsible for major expansions, or the entirely new construction of 784 plants, at an estimated cost of £700,000,000. A great programme of reorganisation has been necessary in the aircraft industry. A gigantic munitions and armaments industry has been constructed. Shipbuilding facilities, machine tool-capacity, have been enlarged. New plants have been constructed for the manufacture of such basic materials as aluminium and certain special types of steel. The graph on the opposite page gives you an idea of even the early expansion of industries connected with armaments from the outbreak of war to January 1941—before America had hardly woken up. Since then, of course, increases have been greater than ever.

But all this has taken, is still taking, time. Time, indeed, is the most precious of all commodities. There never was a more stupid and dangerous cliché than the political tag: "Time is on our side." Time is *not* on our side—at any rate, not if we do not use it. It turns out to be our bitterest enemy. If we could only bridge the gap of time, if we could suddenly wake up tomorrow morning with Britain and America geared to war production with the oiled wheels of industry running smoothly—then victory would be a simple matter indeed. But since we cannot do that, we have to beat time. We have to fight it—and win the fight. We must harness it, use it, benefit by it—or perish.

Men behind the Scenes

Here are pen portraits of the key men behind the scenes of America's general war production. More of these personal notes will be appended to future chapters.

The father of modern mass production—the father, too, of all the aid to Britain—is a six-foot giant of a man called William Knudsen, the head of the Office of Production Management. He was appointed head of O.P.M. early in 1941, with Sidney Hillman, the Labour leader, as Associate Director, the other two members of the board being Henry Stimson, Secretary for War, and Colonel Frank Knox, head of the Navy.

Knudsen, a big florid man, has an attribute which I like—he never wastes time making speeches. He never makes promises, he never talks unless it is to bark out an order.

Born in Denmark in 1879, he went to the United States forty years ago with two things—six pounds in cash and a knowledge of bicycle building. He started out by doing odd jobs in America's gigantic steel mills and in the railway industry. Then came the turning point in his life. He entered the Ford plant as a mechanic. He did his work there so efficiently that

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he was finally appointed to the job of superintending the entire expansion of the vast Ford factories—at a time when the expansion was on a mighty scale.

But he has long since left Ford behind—both in cleverness and mental stature. From Fords, he went to the rival General Motors, and his salary at the end of 1940 was *fifteen hundred pounds a week*. Since the beginning of 1941, that has been changed. At present it is four shillings a year—one dollar a year is his official salary at the White House for controlling America's vast re-armament programme. I hope he gets incidental expenses . . .

Upon Knudsen rests all the real responsibility of seeing that America's industrialists deliver the goods. If the planes aren't produced, then it is Knudsen who takes the rap. But be sure that he wants—and *gets*—planes. More, he sends as many of those planes, and other implements of war, to Britain as can be spared. Perhaps the fact that he has two sisters living in Nazi-enslaved Denmark sharpens and accentuates this resolve to see that Britain gets the tools.

A grey-haired, jovial man, he rarely sees the Press, and when he does so, he peeps out shyly from behind an old-fashioned black-ribboned pince-nez. Everything he does is governed by the words speed and efficiency—for his cheerful, almost casual exterior is only a disguise. Time is his master, and his second god is experience. He refuses to take anything for granted. If a bottleneck crops up, then he goes out himself to solve it. His assistants still talk in tones of awe of the one period of fourteen days when Knudsen visited nineteen different armament plants—each one a long way from the next—and at each place ironed out complaints and difficulties and increased production by brisk and efficient steps.

Here indeed is the man behind all the promises you read about of America's production. And he is rarely proved to be wrong. His job, in a nutshell, is to take in and analyse the reports of every important factory producing armaments of any kind in the United States today.

From each individual report, he sorts out the facts and figures and translates these blue-prints of hope into actual planes and guns and tanks and shells. He is the most important man behind the industrial scene of present-day America. And he is the best man for the job.

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His Associate Director is Sidney Hillman, who has also a particular interest in the destruction of the present German regime. He is a Jew—a brilliantly clever man, born in Russia. He was the creative genius behind the formation of the great Amalgamated Clothing Workers of America, and he has a superb knack of experimenting and overcoming labour problems.

Backing up Knudsen is another man typical of American industry—forceful and clever John D. Biggers, who has been given the special rank of Minister to act as Co-ordinator of American and British Production. Born at St Louis in 1888, Biggers is now a strong man, well-groomed, going grey, but fresh-complexioned, wearing typical American rimless spectacles. He is the sort of American who never shouts—he tackles his problems quietly but efficiently, backed up by wide experience.

He knows England well. He has lived in this country as managing director of the British end of the great Dodge car firm, and knows both British and American big business from top to bottom.

Biggers is a university product, and he started his commercial career as an advertising manager. But he soon got on to semi-public and political bodies. He became assistant secretary to Detroit Board of Commerce, and created a very great impression by his ability to handle men and to see immediately the one step necessary out of any commercial or production deadlock. His first big chance came when he was appointed, in 1937, administrator of the census of unemployed in the United States.

On Biggers depends a great deal of the future of our combined production efforts. His job is to weigh up the industries of both countries, so that he can report to Roosevelt and Churchill on the production possibilities of each country—he has to see what articles *we* cannot make so that America can produce them, and what goods we can turn out quickly (such as small arms) so that America can divert production to other needs. He is the man who divides the tasks which each nation has to perform.

Thus he works in close contact with Beaverbrook, our Minister of Supply. In his office in America, Biggers has all sorts of posters plastered about the corridors. Some read "Nothing is Impossible," but the main poster—the one repeated most frequently in his industrial-cum-artistic fresco—bears the three words TIME IS SHORT. Biggers lives and breathes that motto.

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CHAPTER II

AEROPLANES

This chapter boils down to three figures—how many planes is the British Empire actually getting now from America, what total it has had in the past, and how many we are likely to get in the future—those figures, plus the totals of American production.

The British Empire has, since May, been getting nearly a thousand planes a month. By the time these words are in print, the figure will doubtless have been stepped up considerably. The last available figures show that August was a record month for United States plane production, when the total number of planes made was 1854. I am assured that production will not drop below that figure, which represents an increase of nearly 400 planes over the best previous month. The August total of 1854 was almost exactly the same figure as the entire total turned over to us in the whole of 1940, when we received from America 1875 planes; while in 1939 we got a bare 300—a striking indication of the way in which the arms are beginning to flow.

Indeed, take a look at the 1940 figure before we analyse those for 1941. In 1940, 1875 planes—yet in the first six months of that year, while production problems were upsetting the whole programme, we only received 275. The remaining 1600 were all delivered in the latter half of 1940, when production was just beginning to get on its feet.

Now, take a look at the 1941 figures, as detailed opposite. The first column shows you the planes we have actually received from America each month up to and including August. The second column gives you the total American output so that you can, at a glance, get a quick idea of the percentage of America's production which we are receiving.

Now you can begin to see the line-up of plane production. In the first eight months of 1941 we received a minimum of 4862 aeroplanes. In June 1941 we were promised by Mr

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MONTH	PLANES WE ARE RECEIVING	TOTAL U.S. OUTPUT
January . . .	467	950
February . . .	258	972
March . . .	481	1,200
April . . .	591	1,376
May . . .	*670	1,339
June . . .	738	1,476
July . . .	730	1,460
August . . .	927	1,854
Totals for first eight months of 1941 .	4,862	10,627

Robert Patterson, U.S. Under-Secretary for War, a total of 12,500 planes for the year.

This is probably a little above the figure that will be realised. We were not up to the half-way mark in eight months—though actually, the monthly average worked out at about 600 aeroplanes, despite the extremely bad months with which we started off the year. Production in the last four months was naturally expected to shoot ahead. The production aim since August has been 2000 planes a month, which probably meant for Britain 1600 a month as our percentage rose—another 6400, making a total for the year of 11,262 out of America's total output of about 19,000 planes. Here is the estimated total number of planes received by the British Empire from the start of the war to the end of August 1941.

1939 . . .	300
1940 . . .	1875
1941 (8 months) .	4862
Total .	7037

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* Figures below asterisk in column one are based on the assumption that we are getting half of America's planes. This is, purposely, a very conservative estimate. It has been stated in Washington that four-fifths of U.S. plane production is being diverted to Britain. Still, fifty per cent. is a safer figure. Some of the planes marked as coming to us are doubtless now going to Russia.

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This does not include old planes, many hundreds of which have been sent to Britain from the United States. A large number of civil planes, for instance, were handed over to us for use as troop-carrying transport planes. It also does not include planes sent to France—one of the reasons why the early figures are so small. In the first few months of war, 940 aeroplanes were sent to France, while less than 500 went to Britain in the same period.

It is, unfortunately, impossible to give numbers of the different types of planes that are reaching our shores, though as far as fighters are concerned, it was announced in June 1941 that more than 1000 Tomahawks had been sent to various parts of the Empire.

It must be remembered that people in Britain never see a large percentage of America's planes. A great number of them go to all parts of the Empire. To quote one instance, America is now ferrying warplanes from the United States to West Africa and thence to British forces in the Middle East, as announced by President Roosevelt in August 1941. Great quantities of arms have gone to this battle arena, while other planes go to the Far East or Canada.

Canada and South Africa particularly receive a large number of trainer planes for the Empire Training Scheme ; for remember, the aeroplanes which America sent us in the first eight months of 1941 were not all fighters or bombers. Usually in the aircraft industry, thirty per cent. of machines turned out are trainers. The figure is probably higher at present because of our urgent need to expand the R.A.F. personnel.

At the moment, of course, the goal is more and more bombers —both because we want to wage an offensive war and because bombers are easier to deliver since they can be flown. But that programme is not easy to put into action.

In the summer of 1940, Beaverbrook, quite naturally, wanted nothing but fighters to win the war of defence before even thinking about the war of offence. The change-over has led to certain bottlenecks, just as it has in British production. In January 1941, for instance, after the order had gone forth to concentrate on bombers, only 97 were delivered to the Empire. Since then, production has been speeded up, and up to March alone 400 heavy bombers were flown across the

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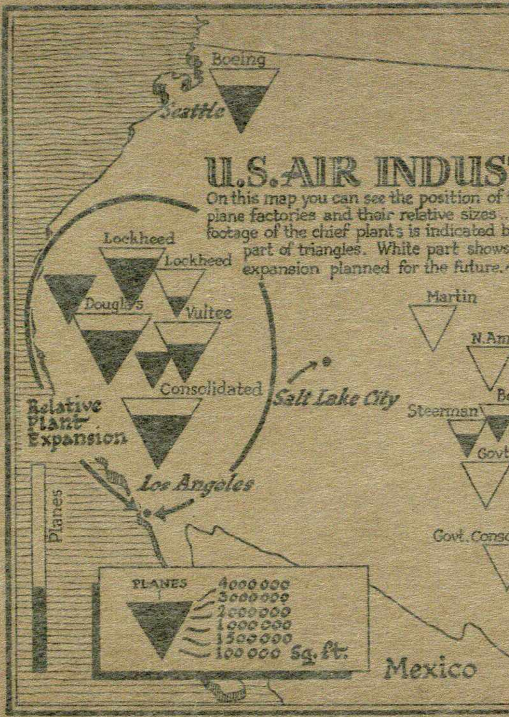

U.S. AIR INDUSTRY

On this map you can see the position of the chief aeroplane factories and their relative sizes ... the total sq. footage of the chief plants is indicated by the black part of triangles. White part shows the expansion planned for the future.

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Atlantic—without the loss, incidentally, of a single plane. There have been many more since then.

One of the problems in this connection has been the switch from medium to heavy bombers—a change brought about by circumstances. When we had air bases in France, there was no real need for aeroplanes with long distance fuel and bomb capacity. Smaller bombers—such as the Germans use today—served us well. Since the fall of France, however, we have concentrated on great giant bombers, heavily armoured, capable of making long-distance raids over the enemy. This change-over has naturally led to some dislocation and delay.

It would not be wise, for instance, to run away with the idea that America is now sending us large numbers of heavy Flying Fortresses every month. I am not permitted to say the number actually on operations with the R.A.F., but I have an idea that it is not as big as you would imagine.

But then, many of the imaginative figures of aeroplane production are the unfortunate results of true statements by politicians which mean, in effect, nothing. In 1940, Roosevelt announced to the world that the great Boeing company in Seattle, which produces Flying Fortresses, was actually producing *four times as many planes as in the previous year.* Knowing the percentage we get, we might have expected large numbers to be reaching Britain daily. But Roosevelt did *not* say that in the whole of 1939, *this company only produced* 41 *of those planes.*

Before we deal with future production, what snags have we to face in production at the moment? The one I mentioned above—the change-over from one type to another—is probably the biggest, and it is common to this country too.

Laymen entirely forget that it is absolutely impossible to mass produce aeroplanes in the same way as cars. It just can't be done. A modern bomber—*without its engine and instruments*—has about 20,000 parts compared with less than 2000 of a motor car. A Boeing contains 2500 feet of steel cable, 1600 feet of tubing, and 125,000 rivets. But that, of course, is not an insuperable difficulty to mass production. The biggest problem—and this must in some way affect future production—is that an aeroplane must be changed and changed and changed as war progresses. You cannot plan the 1943 aeroplane now. You have to work, to improvise, to change, as you go along. An aeroplane is a compromise—a compromise between a fight in the skies and a drawing board. The needs of both have to be satisfied.

Here is an example. One of the firms doing the best production job of all in America is the Curtiss-Wright plant in Buffalo—the firm producing Tomahawks—which is turning out 200 planes a month. The feat is all the more remarkable when you consider the changes that have taken place in their planes since the war started.

In 1938, the Curtiss fighter had two machine guns. In 1939, the French demanded four. Now the Curtiss has six machine guns, and mounts ⅜-inch armour plate. Yet the first change from two to four machine guns meant modifying about 150 templates and making 350 new ones. The later adjustments naturally involved even greater difficulties. Synchronised firing through a three-bladed propeller is no easy job. Heavier armoured protection means drastic engine alteration if the aeroplane is to keep up its performance.

Engines are another problem. Indeed, they constitute one of America's gravest problems. In the early stages, Boeings had so few engines that in order to store planes, they flew their bombers down from Seattle to San Francisco where storage facilities were easier, then dismantled the engines, shipped them back to Seattle, so that they could be fitted into another carcase which was then flown south—and so on. That, of course, is not happening now, but it gives an indication of how airframe building can get ahead of engines. For remember, you need on an average two engines per plane—some have one, but many have four.

The two greatest makers of aero engines in America are Wrights and Pratt and Whitney. By the first quarter of 1941, Wright was turning out a thousand high-powered engines a month, while Pratts were making nine hundred. Other smaller concerns brought the engine output up to about 2600 engines a month; enough for 1300 planes a month. And in addition to planes, remember, America is also trying to send us large quantities of engines by themselves—for example, when America in January sent us 467 aeroplanes, she also sent us 574 extra aero engines.

The aero engine industry was, until midsummer, regarded as the worst bottleneck of all in aircraft production. After all, 2600 engines are not nearly enough for a large programme. The figure has risen since then to about 4000 engines a month—that is the present figure—but experts consider that this is not high enough, particularly as Britain needs engines in addition to planes.

At midsummer, 1941, a number of new plants started to come into production. It was at this stage that America's great car industry started to play its part in producing engines, not only in existing factories but in new ones—an example is Ford's new aero engine factory which is described a few pages farther on in this chapter. The industry is now being geared to produce a monthly average of 8500 engines—but I don't think it will reach that for some time yet.

But that is the future. And how many complete aeroplanes can we expect America to produce every month in 1942?

Well, let us see. What are the promises? They vary, of course, from the absurd statement by Ford—long since forgotten, thank goodness—that he could turn out a thousand planes a day, to the more temperate hope of the President himself for 50,000 a year. Even that figure, at present, is too high. Informed quarters in Washington estimate a production of 30,000 for the whole of 1942. Is that figure possible?

It is. I should say that that figure—roughly, 2500 planes a month—is just about dead accurate, and not a bit too optimistic.

It is possible, you know, to work out plane potential by a very simple and pretty formula, which looks far more difficult than it actually is. This is how it is done. First you find the floor space devoted to the industry—the amount of space the factories actually take up.

The graph on page 33 shows you that in 1941 19,000,000 square feet of space are devoted to production. In 1942 the figure rises to 32,000,000. Of the 1941 figure, 15,000,000 square feet are at present used for the production of airframes (as apart from such things as electrical installation, propellers, instruments, etc. etc.). In 1942 the airframe space will be 25,000,000 square feet.

Now, an average of seven and a half pounds of airframe can be produced per square foot of floor area per year—that is, provided fairly heavy shifts are worked. The figure can actually

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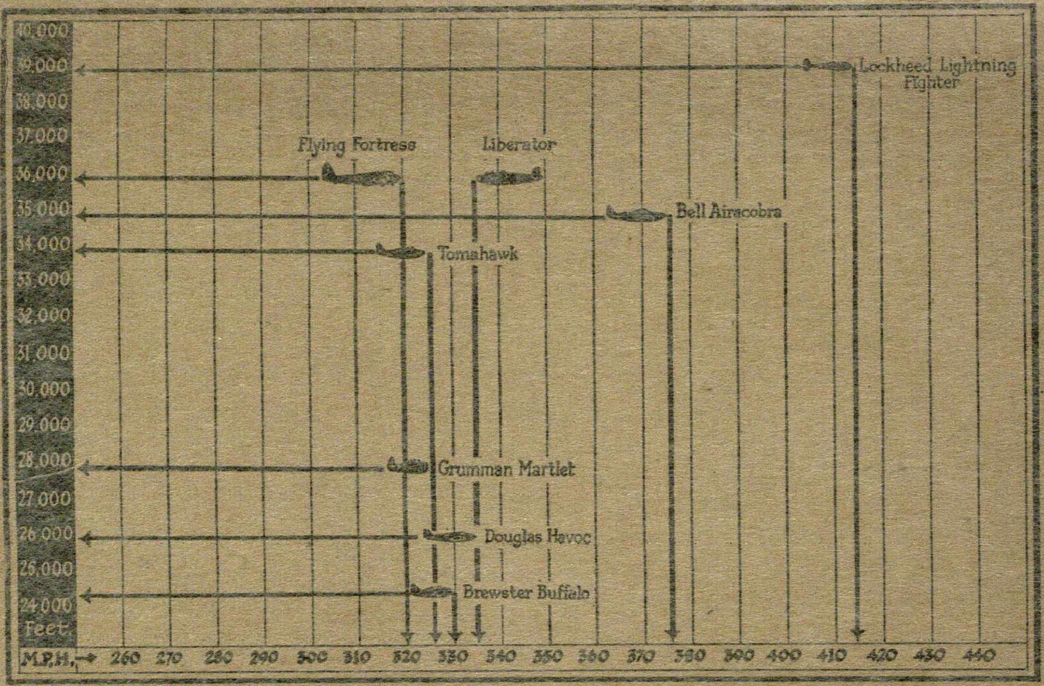

Planes we are getting from America

The figures ranging up the left-hand side give you the service ceiling of the various American aeroplanes now in use by the R.A.F. The figures along the bottom show you their maximum speeds.

rise to ten pounds at peak production. An average airframe weighs about 6000 lb. So America's fifteen million square feet of floor area mean over a hundred million pounds of airframes, or about 19,000 planes, which checks up perfectly with the year's figures given a page or so back. In 1942, the 25,000,000 square feet give us a theoretical output of 30,000 planes. There may be a few snags, but it won't be far short of that figure. It is just possible that it will even be beaten.

We cannot say how many of these planes Britain will get, because Roosevelt has power to switch American production one way or the other, and to hold back British orders if he thinks it wise. Russia will enter into calculations, and it is important that America's air force should be well equipped, for we have robbed them of a lot of their equipment. If our output goes up (at present it is estimated in America at 1500 planes a month) it would be quite understandable if America sent us a smaller percentage than she has done in the past.

But even that smaller percentage may well mean larger figures than the present ones. Let us take a look at the most centralised district in the world for aircraft production—California.

About a quarter of America's aircraft industry is now situated within a few miles of Hollywood. Never before in history has a single industry been so centralised as this. In 1939 the aircraft industry in the Los Angeles county employed 11,800 men. By 1940, that figure had risen to more than 50,000. Since then it has more than doubled again.

The new plant construction in Southern California is staggering. The Douglas Aircraft Company's new plant actually covers 142 acres. In this particular plant—as in many of America's new factories—all the lighting is artificial, there are no windows, and there are enough bombproof shelters for every member of the staff. Aircraft orders for this comparatively small western district totalled *up to March* 1941 more than £378,000,000—actual figures were £191,995,715 for Los Angeles County, £66,778,500 for San Diego, and £117,574,225 for the Pacific coast.

That represents about a quarter of the airframe industry. In other parts of the country, the picture is the same, only less concentr[illegible]d.

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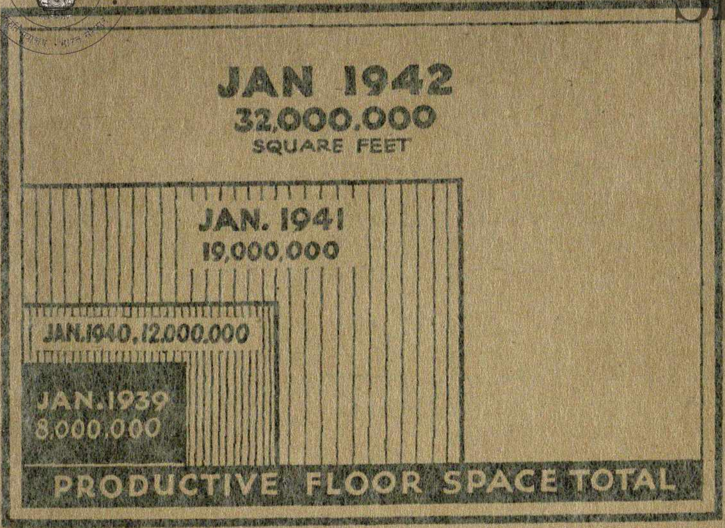
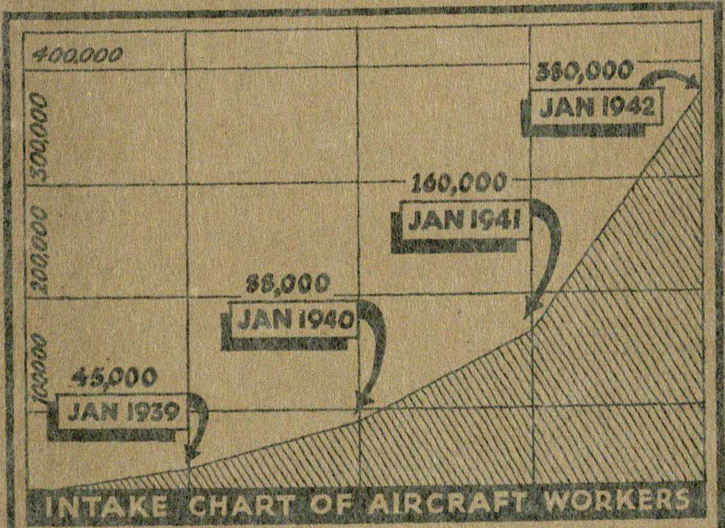


PRODUCTIVE FLOOR SPACE TOTAL



INTAKE CHART OF AIRCRAFT WORKERS

MINISTRY OF CULTURE · GOVERNMENT OF INDIA
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Typical of the modern factories is the new five and a quarter million pound aircraft engine plant recently built by Fords just outside Detroit—I mentioned it a page or so ago. It is 1000 feet long and 360 feet wide and was constructed in a vast "box" of composition board and tar paper, regardless of weather and darkness. The "box" stands about ten feet outside the finished wall of the factory. Construction started in October 1940. The steel framework was done by February 1941, and the entire job finished by the end of March.

One end was completed, and actually in use, before the other end was done. With an eye to future possible bombing operations, there are no windows in the shop section, and the outer walls carry no part of the building load. The ceiling of the first floor is 17 inches thick—reinforced concrete—and the ground floor is 12 inches thick. The vital centre is protected by the less vital offices which form a protecting ring round the outside.

The expansion of individual plants is, indeed, one of the most striking features of the aircraft industry. Boeings in Seattle had a pre-war employment figure of just over 6000. They are well on their way now to 25,000. Brewsters—makers of the Buffalo—have increased their staff in the last eighteen months from 1000 to 14,000. A small firm like Northrop had less than a hundred employees when Hitler marched into Belgium. Now they are nearly at the 5000 mark.

And still they all go up. So do the factories turning out accessories. Figures are not available for bombs and ammunition sent to this country, though all American planes are completely equipped with spares, with guns and with ammunition.

CHAPTER III

SHIPS

ON the riveters and welders and shipbuilders of the United States rests the fate of the Battle of the Atlantic. And because of that, maybe, the fate of the whole war. For it is in the American shipyards that *must* be born the vessels to replace the hulks and rotting bones of those that lie in the watered graveyard of the Western Approaches to Britain.

This conclusion is sadly simple to read. When the war broke out, Britain had about 20,000,000 tons of merchant shipping. Much of that is now transferred to the Navy. Between the outbreak of war and the end of June 1941, when the last shipping figures were announced, we lost 1521 ships totalling 5,825,768 tons. Until October 1940, we were able to make up our losses by existing American and Allied ships transferred to us—but these windfalls will never be repeated.

And we, by ourselves, cannot match the rate of sinkings. In 1938, Britain built just over a million tons of merchant shipping (apart from naval construction). The whole of the Empire on a war-time footing should be capable of producing about two million tons a year—166,000 tons a month—but not a ton more than that. In the year July 1940 to June 1941, the Germans sank 1132 ships of a tonnage of 4,942,104 tons—an average of about 94 ships a month, totalling about 412,000 tons. Our production of 2,000,000 tons a year means 166,000 tons a month for replacements—unless the lull of the summer and autumn of 1941 continued, and this is by no means certain. So one fact stands out a mile. We in this country cannot, and never shall be able to, build as many ships as are sunk.

Even allowing for the valuable tonnage supplied to us by the Allied forces, the position is far worse than most people realise. The need for merchant ships of all kinds and sizes—the need for ships to bring across to Britain the tools of war,

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to bring food, raw materials, supplies of all kinds from all parts of the Empire—has always been as urgent, if less spectacular, than the cry for twenty thousand planes to stave off the Luftwaffe.

Can America help us enough? For though, at the time of writing, Atlantic sinkings have decreased, the moment will surely come again when the attack on our lifeline to the Empire and the New World surges up with a terrible intensity.

America's capacity to build ships must be split into two parts—warships, merchant ships. And firstly, we must deal with merchant shipping, for here the need is more urgent. The British Navy stands supreme, even though its arc of battle stretches from Iceland to the Malay Archipelago, even though it must probe every corner of the seven seas. But it is better able to face the future than the merchant service.

Roughly speaking, America is now turning out one merchant ship every two days. The ultimate hope of the United States Maritime Commission is exactly to reverse these figures—two ships every one day.

Here are the tonnage totals and estimated tonnage totals of American production over the four vital years ending in December 1943:

YEAR	TOTAL TONNAGE
1940 . . .	540,000
1941 . . .	1,250,000 [1]
1942 . . .	2,500,000
1943 . . .	5,000,000

This is merchant shipping only. Now, study this "four-year plan" with our production figures and sinkings.

America hopes to produce between 1940 and 1943, 9,299,000 tons. Our production should be 8,000,000—a rough total of 17,000,000. If Germany's sinkings keep up at the rate of five million tons a year, then we shall not produce enough vessels to win the war. Sinkings *may* drop—they *have* dropped for the moment—but I, for one, don't like to bank on that.

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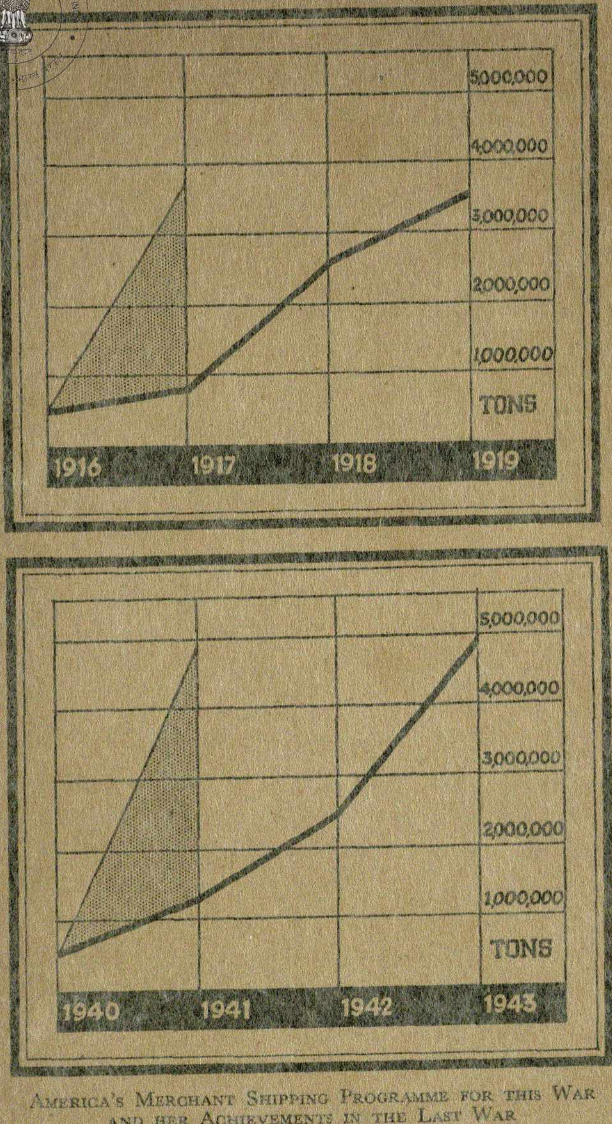
[1] In September, it was announced that 1941 production, estimated originally at 105 ships, was twenty-five per cent. ahead of schedule, and that 1941 would produce 135 new ships.



AMERICA'S MERCHANT SHIPPING PROGRAMME FOR THIS WAR AND HER ACHIEVEMENTS IN THE LAST WAR

The shaded portions in both charts show ships sunk by enemy action.

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Now see how America's figures compare with those of her effort in the last war.

YEAR	TOTAL TONNAGE
1916	500,000
1917	821,000
1918	2,602,000
1919	3,500,000

This last figure—the 1919 figure—is the greatest output of ships ever achieved in any country in the history of the world. And these two tables of figures, side by side, are a complete answer to any critics of America's ability to turn out large numbers of merchant ships comparatively quickly.

What the present production figures mean in actual ships is a different matter. Most of America's shipbuilding—but not all—is under the direct eyes of the central organisation, the United States Maritime Commission, which farms out orders, arranges priorities, and has a fixed goal in view—705 merchant ships of all types and kinds by the end of 1943. Many have already been delivered, though not all to Britain of course. America has had to replace shipping she turned over quickly to us at the beginning of the war.

About 200 of these ships have already been built, leaving 500 still to build—an average of just over twenty ships a month from the Maritime Commission alone, for the years 1942 and 1943—the figure will obviously be less per month at the start of 1942, more at the end of 1943. But these ships do not represent the whole production. One section of American shipyards is building 146 other merchant vessels, and there are also 60 special emergency ships for Britain—the "ugly ducklings"—which we hope will all have been delivered by the spring of 1942; plus 222 ships of a similar type being built (or a few transferred) under the Lease-Lend Act.

We have, unfortunately, no certain knowledge as to when these ships will be delivered—beyond the 60 "ugly ducklings." (More about these in a minute.) The Maritime Commission ships are priority ships—some of the others may possibly suffer delays, if materials and production are switched to other urgent defence needs—say, a sudden extra demand for tanks or bombers for Britain or Russia. I don't say this *will* happen—Roosevelt

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knows as well as Churchill the vital need for ships—but I am only concerned with trying to ascertain just how many ships America is going to produce in 1942 and 1943. She will build for *certain* considerably more than twenty merchant ships a month, for these represent 500 ships, while the total America has in view is the total of the figures I have just given: 705, 146, 60, 222—1133 ships.

The United States should be able to turn out a *very large percentage of these ships*. She estimates producing 335 vessels in 1942. Her last war figure was extremely good, but her capacity now is far better than it was then. Much of the framework of the last war effort is still in existence. Quite apart from the fact that technical efficiency has advanced, all the vast expansion that is now taking place obviously starts from a higher level. Everything is on a larger scale than it was in 1918. Boiled down simply, America can produce more steel than she could then, she has more skilled labour, and a mass production technique immeasurably increased during the past twenty years. Actually on March 1, 1941, the American Bureau of Shipping showed that 332 vessels, totalling 1,732,728 tons, were under construction.

Look back to the production figures. In the last war, it took America until 1916 to produce half a million tons of shipping. She topped this figure in 1940—and remember, when you consider this figure, what I said earlier in this book: America's industrial giants did not enter the war *until the autumn of* 1940.

It was not until 1917 in the last war that America had 61 yards and 215 shipways. She *started this war* with 51 yards and 119 shipways—very nearly as many as she had in 1917 when she turned out three-quarters of a million tons of shipping. And now, an extra 150 shipways have been in process of building throughout 1941—many of them are now ready—while about 60 more are projected.

Let us examine the 1940 figures a little closer. In that year —before being geared up, remember—America launched 68 seagoing merchant vessels of a total tonnage of 540,000. These vessels were constructed by 34 shipbuilding organisations. (In addition to this, private shipyards had under construction 36 naval vessels with a displacement of 240,000 tons, of which about 18 were delivered complete. During the same year, contracts for 284 more warships were handed out.) Three

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entirely new shipyards were constructed during the year, and building was started on a number of new yards, while others were being extended.

The 1940 total of *merchant* ships was 68. Now, see how production started to spurt in 1941. In the first five months of 1941, 33 ships were *completed*—not launched, which is only two-thirds of the completed job. The last figures available, as this book goes to press, are those for May 1941. In that month *ten* ships were completed totalling 80,000 tons compared with the May 1940 figure of four. In addition to this, 12 more ships were launched.

Even more striking than the comparison with May 1940 is the fact that out of 33 ships completed in the first five months of 1941, ten were produced *in the one month of May*, while four months were necessary to produce the other 23. That is easily the best illustration I can give of the rapid stepping up of production.

The best production jobs of all are being done with the now famous "ugly ducklings"—so called because of their box-like shape with pointed ends. They can be built far more quickly than ordinary ships, because they have so few unnecessary refinements and so much labour saving, while parts can be built in slack periods and stored like motor-car components.

The "ugly duckling" is a vessel of 9300 tons—the order for the original 60 went out at the beginning of 1941, and the last one was supposed to be ready shortly after the end of the year. The builders are not behind on schedule. Each ship is entirely standardised, partly pre-fabricated, eminently suitable for convoy work, of a capacious type, and with a speed of ten to twelve knots. Each one is 410 feet long and costs £250,000.

A large number of new shipways have been set up for the "ugly duckling" programme—more than twelve in Baltimore, six at New Orleans, and twenty-two divided between Los Angeles, Portland and Houston, four at Mobile in Alabama, and six at Wilmington. The first keels on nearly all these yards were laid down as far back as April 1941.

It is in the construction of these new-type vessels that the Americans are doing one job which is saving time, trouble, money, materials, and producing better performances—welding. In the new American yards, at least ninety per cent. of the work

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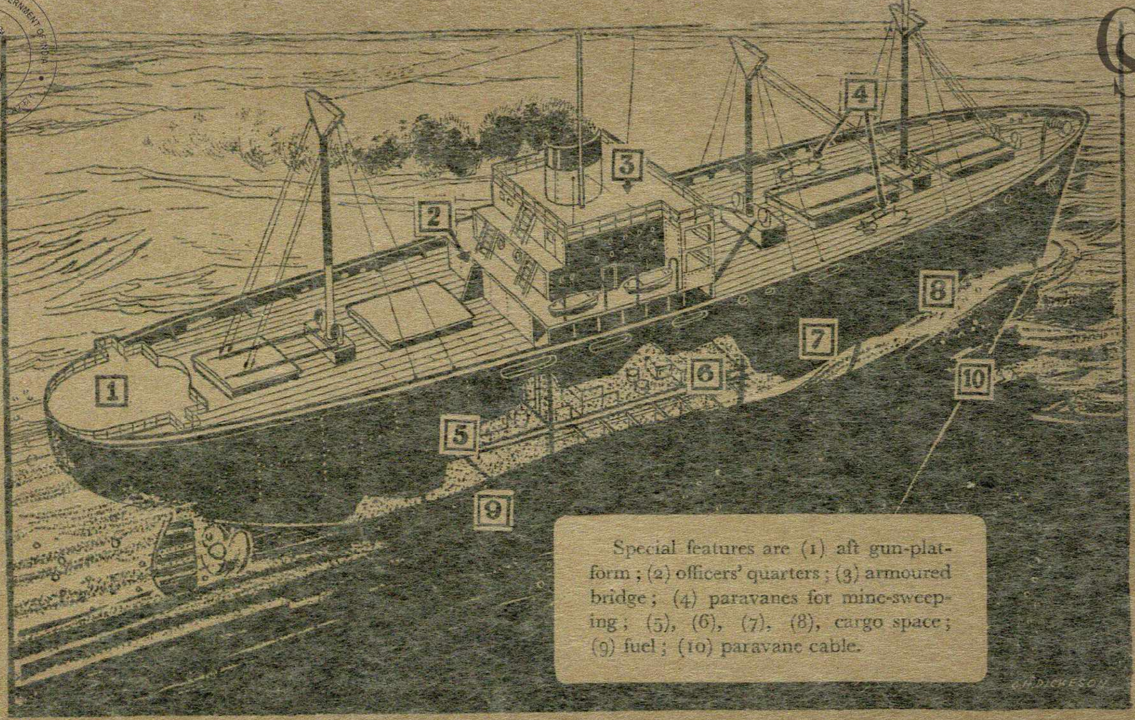

Special features are (1) aft gun-platform; (2) officers' quarters; (3) armoured bridge; (4) paravanes for mine-sweeping; (5), (6), (7), (8), cargo space; (9) fuel; (10) paravane cable.

"The Ugly Duckling"—"Boxes with Pointed Ends" for the Battle of the Atlantic is welded instead of riveted on all types of merchant ships. We can thank Germany for that lesson. After the last war, when the tonnage of their warships was limited, they eliminated overlapping steel plates, plus the weight of the million rivets that go into an average ship, by welding. America is doing the same—and finds that she is getting a tenth more ship for the same weight.

The time saved is considerable. This has been demonstrated in Ingall's yard in Pascagoula, on the Gulf Coast—easily America's most advanced yard for welding. When riveting was the order of the day, they found that steel plates which didn't fit to the inch had always to be sent back for repunching. Now they simply tack the plate on to the frame, trim the edge, then weld it into place. Their first all-welded ships cost so much less than the old ones that the firm returned a large sum of money to the Maritime Commission. And they found the vessels faster than the riveted ones, capable of carrying more cargo per ton, and cheaper to run.

America, of course, could speed up still more, but if you ask any three shipbuilders how long it takes them to turn out a 5000-ton cargo vessel, their answers will vary by months. One yard, with huge, modern installations, will say three months; a smaller yard, with labour difficulties, will take six. The third might take a year.

Remember that American merchant shipping is being built in a conglomeration of yards—some satisfactory, some very poor. *But every one useful.* The crack firms are turning out fast jobs, the small firms, slow jobs. None, yet, are emulating the speed with which ships were turned out during the last war. And some of those 1918 records were truly remarkable.

On April 28, 1918, the Americans laid the keel of the steamer *Tuckahoe.* The vessel was actually launched on May 25—27 days, three hours, ten minutes after the laying of the keel. Only ten days more were needed for the complete fitting out of the vessel.

And on July 4, 1918, the steamer *Defiance* was launched at San Francisco within 38 days of the laying of the keel. She was 450 feet long, had a 56-foot beam and a depth of 38 feet. This was no isolated spurt. As the *Defiance* slid down to the water, the keel of the *Invincible*, a cargo vessel of similar size, was laid

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on the vacant place. At dawn the next morning, the first rivet was driven in. In four days, all the floors were in position, and within 24 working days of the laying of the keel, the *Invincible* was launched. Forty thousand rivets a day went into the vessel.

History, I know. Old history. But I wonder if history would repeat itself if the British Government offered an annual prize of £10,000 to the American firm which made the quickest time, ton for ton, in the building of a ship.

I have purposely omitted two points until now. How much of this shipping shall we get? And what existing shipping has been transferred to us?

The amount of American shipping to be turned over to us depends *entirely on Hitler's U-boats and Focke-Wulf Condor planes.* This is not as obvious as it sounds. We have firm contracts for tanks, planes, guns. We also have similar contracts for ships—more than 400 vessels in America's programme are certain to come to us. But as America builds her own new merchant navy, some of those ships will also come to us, or at any rate more old ships will be released. The quantity depends entirely on the rate of sinkings. The important point is *production.* America must produce more than enough—with us—to even out sinkings. Providing the ships are built, she will sell or lend us just as much shipping as we need. The rest of it will be helping Britain indirectly—transporting to America, under the American flag, raw materials which will be turned into arms for the Empire.

The second question—existing shipping which has been transferred to us—is important to the Battle of the Atlantic, but *not* important to the Battle of Production.

Like Allied shipping, it was a windfall that cannot be repeated, so the figure does not enter into our calculation of the strength of America, and has no bearing on her present and future capacity to build.

Those existing ships served their purpose in bridging the gap until America's shipbuilding production got on its feet—and served their purpose magnificently, when you consider that in the first eighteen months of war—a vital eighteen months—America turned over to us 1,200,000 tons of shipping.

Before turning over to America's warship production, there is one other important way in which America is helping us.

Allied ships are being repaired and refitted and armed by United States concerns. A ship that limps home with a hole in her side is as bad as a ship that is sunk, until it can be repaired. British shipyards are working to capacity turning out new ships. But America has allotted large sums under the Lease-Lend Bill for looking after our disabled vessels. More than £5,000,000 is being used for "testing, reconditioning, etc." of ocean vessels —you can do a great deal of repairing for £5,000,000—together with nearly £3,000,000 for naval supplies, and a million and a half for "services." Roosevelt announced that in June 1941, sixty of our merchant ships were in American yards being fitted with deck guns and devices to counteract magnetic mines.

NAVAL CONSTRUCTION

So we come to America's plans in naval construction. Here, briefly, is what America is building for her own navy. Her programme, to build a two-ocean navy, is to cost the colossal sum of £1,800,000,000. Of 2831 ships ordered, 968 of all classes are *already under construction.* These include seventeen battleships, twelve aircraft carriers, fifty-four cruisers, seventy-four submarines, and 197 destroyers, with half a million men working on the contracts. Six of the cruisers, believed to be well in production, are said to be a type of 'pocket battleship' which might well be an answer to Japan's latest fast heavily armoured cruisers. Among the battleships are the 45,000-ton monsters of the Iowa class which mount nine 16-inch guns and 36 other guns.

America estimates that 1941 will see the completion of two battleships, twenty-four destroyers, nine submarines—plus smaller craft, but no cruisers or aircraft carriers.

No indication of the time limit for this ambitious programme has really been given. The end is obviously a long, long way off, and the help given to our Navy is difficult to ascertain. For a start, of course, we had the fifty over-age destroyers. Though old, they have been most valuable. We have had mosquito boats, submarines, and, of course, warship repairing facilities—a very important point to remember.

I think that material aid for our Navy will be given by sending over old vessels as new ones come off the stocks. America has

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still, for instance, another seventy-five over-age destroyers similar to those transferred to us. As new destroyers are completed, the old ones will almost certainly come to us.

Naturally, the naval aid we receive is kept secret, but it was stated in Washington in March 1941, that nine submarines, fifty-five submarine chasers, and eighteen "mosquito boats" would be handed over to Britain "before the end of the year," as they were replaced in the navy building programme. America also has some old cruisers of the Omaha class which would be quite useful in the U-boat campaign.

But all this rebuilding takes time—less time, fortunately, since Colonel Frank Knox became U.S. Naval Secretary. He has scrapped the old leisurely five-day, 40-hour week. The navy shipyards are now working a six-day, 48-hour week, with three shifts in the 24 hours instead of one. Yet, warships, like aeroplanes, cannot be mass-produced. The designs change all the time—today's destroyer is as strong as yesterday's cruiser, today's cruiser is nearly a battleship. You cannot "freeze" designs—if you could, then America's naval programme would not take half the time it will do.

Still, Knox has worked wonders. Now, America is building destroyers in 18 months instead of the peace-time rate of 32 months; cruisers take 30 months instead of 36, submarines 22 instead of 30.

They will come, but until then, more and more *merchant* ships must remain the first goal. Indeed, the U.S. Navy *is* helping Britain—by deliberately waiving certain of its obvious rights so that we can get our merchant ships more quickly. And that is the greatest help it can give us—the men, the materials, the time, the skill to build the merchant ships without which the war can never be won.

MAN BEHIND THE SCENES

Rear-Admiral Emory Scott Land, chairman of the United States Maritime Commission is a slight, wiry man of sixty-one, who has a lovely habit of uttering, in the most casual way, an astonishing collection of seagoing profanity in its most lurid form. He is the only chairman the Maritime Commission has

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ever had since its inception in 1936, excepting Joseph Kennedy who ran it for the first ten months.

Land is a great athlete. He is even now a tennis champion; he won the athletic sword at his university in 1900 for football, baseball, and other sports. He flies his own plane, he still acts as referee at big football games.

Sailors call him "the busiest guy in the Navy" and he retired at the early age of fifty-eight after thirty-five years at sea—but for a few days only, so that he could take up his present position.

On Land depends the United States shipping progress. He has the job of providing the ships to carry the tools, and at least he has been lucky in one respect—he got an early start. The Maritime Commission was planning ahead, working slowly up to its present objective years before the war started; organising a new merchant service to replace America's slow, second-rate fleet of merchant ships. That start, plus Land's present drive and his ability, will make all the difference to the Battle of the Atlantic.

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CHAPTER IV

TANKS, GUNS, AND SHELLS

TANKS, as much as aeroplanes, are going to win this war. Before Britain—or America—can hope to thrash the panzer divisions of Nazi Germany, tanks must roll off the assembly lines in their thousands. Tanks by the score are no good. Tanks by the hundred are not good enough. These ships of land warfare *must* be delivered in their thousands, and before the moment comes to strike a dagger at the heart of Germany, Britain must have complete superiority in the weapon which, ironically enough, she invented herself in the last war.

So far, since September 1939, the Germans have outsmarted us in every aspect of tank warfare. They have learned that the tank is not merely an aid to infantry, but is an attacking force in itself. They have learned that tank columns, penetrating deep into enemy lines, can cause utter confusion and chaos among even the best regulated soldiers. They have made their tanks big. They have made their guns powerful, their armour heavy. And—most important of all—they have learned the value of *quantity* as well as *quality*.

The aeroplane is a part answer to the tank, but the best answer of all is for us to have so many tanks that the initiative is *ours*. Then indeed, with air parity as well, the battle of production becomes the keystone of victory.

But where are the tanks? And, apart from our production, where are America's tanks? How, too, is she situated for guns and shells and other armaments of land warfare, for in this chapter we shall deal not only with tanks, but with guns, shells, machine guns, rifles and bullets—in short with the production of all armaments needed by the modern soldier. And I fear we shall find that in more than one case, production figures issued in Washington are extremely vague—so vague that they may well seem to have been given in that way deliberately, possibly to hide discouraging figures. It is very easy to say that the production of a factory has increased by two hundred per cent. It is much harder to say that the original production of that factory was only ten tanks a year. As an American drawled to me while I was writing this book: "You can't get away from one fact—two times nothing is still nothing."

This tendency to put forward percentage increases has been particularly noticeable in the American munitions industry. For instance, in September 1941, John D. Biggers arrived in Britain with the special rank of Co-ordinator of British and American production, and immediately announced these American figures:

> *Tanks:* No real production a year ago. Present rate runs into "many hundreds a month." Production of all types of tanks will be doubled between now and December.
>
> *Machine guns:* Present production will be almost doubled between now and December as an entirely new crop of plants come into production.
>
> *Small arms ammunition:* Production is double that of a year ago, and new plants will double it again by December.
>
> *Anti-tank guns:* No production in June 1940. To-day it is fair, and will be more than doubled by December.
>
> *Rifles:* Production doubled in a year.

Now these figures mean—exactly nothing. Which is precisely what they were intended to mean. Tank production is certainly stated to be "many hundreds a month" so let us first get down to tanks a bit more thoroughly.

Seven major plants are now turning out light and medium tanks in America, in addition to many plants making components. The total output in July 1941 was roughly four hundred tanks a month—260 light tanks, 140 medium. According to Biggers, the figures were to be doubled by the end of 1941—but somehow I doubt very much indeed whether America is producing anything like eight hundred tanks a month. Indeed, one very sound American estimate in the summer of 1941 was that the United States would be doing well if it produced seven hundred a month by *June 1942*.

Still, the production figures compare favourably with 1940,

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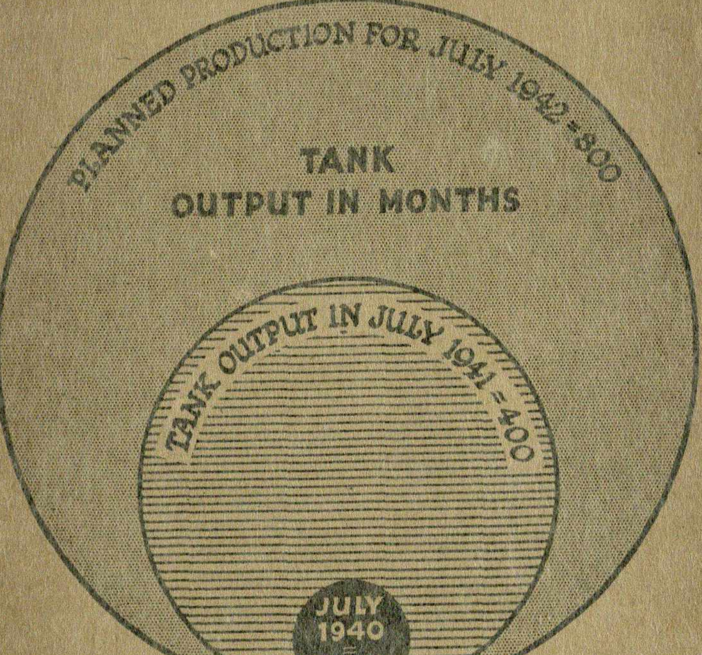
when America's rate of production was only twenty a month, while in the last war she made only 64 tanks *in the whole of the time when tanks were being manufactured.*

By the summer of 1941 her rate of production was about



How Monthly Tank Production has leapt up in America

thirteen a day—a good start, particularly as it has since been increased.

This should be possible. Two great plants in Detroit are together turning out five a day of America's biggest tank—the 28-ton M3 medium tank, which is 18 feet long, mounts six guns, including a 25-mm., and can travel fifty miles an hour

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over smooth country and 25 over rough. It is powered by a Wright aeroplane engine. This output of five a day is particularly good, for the first of these tanks was only produced in April 1941.

The other American tank—the M3 light cruiser—is being produced by one factory in Berwick at the rate of five a day, while other smaller factories are helping to bring the figure up to thirteen a day for the total output. The Berwick factory estimates that by the end of 1941, they will be turning out eleven light tanks a day.

It is worth pointing out here that America is producing no super-heavy tanks, such as those which seems to have served the Germans so well. Like the British, the Americans do not appear to favour very heavy tanks, though the fire-power and armour of their 28-ton tank is much better than one would expect in a tank of this size. They did have a 50-ton tank in the blueprint stage, but that is as far as it got. I am not arguing whether this policy is correct or not. I am certainly not prepared to prophesy what the result would be in a pitched battle between five hundred heavy tanks and a thousand light tanks. I merely state the fact that America produces none of the heavy ones.

I rather imagine that America's concentration on the production of medium and light tanks is part of a British programme, and though there have been no results published of any 28-ton tanks in action, their light tanks have certainly done wonderful work in Africa. They are first-class machines in every respect.

Now, what about our percentage of these four hundred a month. In April 1941, the British were said to have had 1500 tanks on order. Doubtless there have been many more orders since then. In addition to those orders, for which we were prepared to pay, Britain is to receive 5000 tanks under the Lend-Lease Act—and the hope has been expressed that these 5000 will be ready by the middle of 1942 ; a rather optimistic hope, I think.

It is very difficult to arrive at any figure for those we have got since the war began. The most recent reliable figure was that in July 1941 America exported to the Empire tanks worth £1,200,000. Since an American light tank costs £4000, this is equal to three hundred light tanks for the *one month*. And this figure—supplied by the American Department of Commerce—

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can be taken as reliable. I think we can reckon, using the July figure together with certain other information, that we are getting *as an absolute minimum*, about two hundred tanks a month from the United States.

It is very important to remember that these tanks are *not* coming to Britain. They are the answer to the German panzer threats in Egypt. Now that the Red Sea is open to United States shipping, it is obviously more practicable for American goods to go direct to the Middle East while we produce for our own needs. In the Middle East zone, a gigantic pool of American arms of all sorts has been built up. Ever since June 1941, when forty American freighters went across to Africa with armaments, between twenty and twenty-five ships a month have been leaving America regularly for the Middle East—and a large proportion of their cargoes has been tanks. As far back as June 1941, America sent fifteen tank experts to Cairo, to act as instructors to British tank schools. Fifteen men can teach a lot of people—which seems to indicate that there are a lot of tanks.

Before we go on to guns, I want to give you an example of America's hustling tactics in the building of tanks. It is the history of the Chrysler tank arsenal in Detroit—specially planned and specially built for tanks and tanks only, and now turning out nearly a hundred of America's heaviest tanks a month. In June 1940, the president of the Chrysler Corporation got a phone message from Washington, asking him: "Will you make tanks for us?"

A bare ten months later, Chryslers had finished their first 28-ton tank, starting absolutely from scratch, with nothing but a bare plot of land on which to erect a factory.

Four days after the phone call in June, the Chrysler chief examined a specimen tank, then went back to Detroit—with 168 lb. of blueprints. Almost immediately, he signed a contract with the army, by which he got £4,000,000 to build and equip a tank factory for the army. On September 11, ground was broken. On November 19, men started putting up the steel. By December, a great part of the steel work had been finished, and 80,000 panes of glass were put into the building. By early February, the external structure of the factory was almost finished. Now, it *is* finished—a factory standing on

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113 acres of land outside Detroit, employing ten thousand men, in which a train moves up to one end bringing raw materials, and the completed tanks go out at the other.

Other tank factories being built have still to come into operation, and production will certainly go up in 1942, though future deliveries to the Empire depend on a variety of circumstances. For one thing, the needs of America's own army will have to be considered, once we feel that we are doing fairly well ourselves ; the needs of Russia will also enter into calculations, for there, of course, the tanks are fighting for our preservation just as much as if they were roaring along British roads or penetrating Malayan jungle.

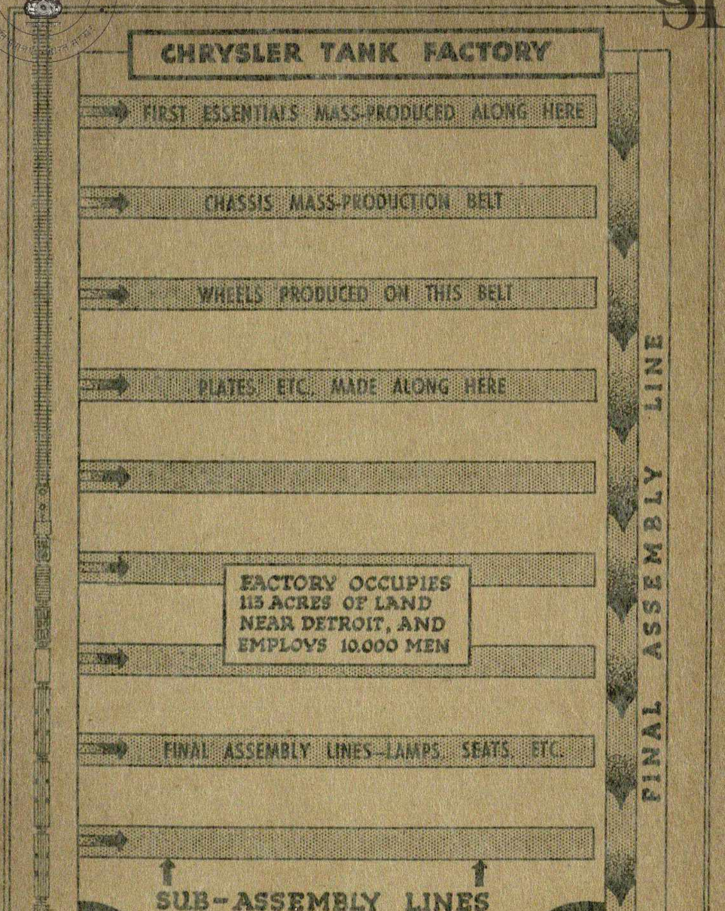
Now we come to guns. In August 1941, Roosevelt gave these figures about the production of various types of guns :

> 37 *mm. anti-tank gun :* 72 in July 1941, expanding to 160 in August, 260 in September, 320 in October.
>
> *Mortars :* 221 in July, 340 in August. September and October figures " even larger."
>
> 90 *mm. anti-aircraft guns :* Programme calls for 61 per month for the last four months of 1941. " The Department believes these can be made."

Let us look at the 37 mm. anti-tank guns first. Present British orders for these total 7000. If the October hope of 320 a month was justified, a large part of that order should be dealt with fairly quickly, though there appears to be some doubt as to whether these guns are really heavy enough for use against modern tanks. Some of our British tanks are armed with two-pounder guns firing as heavy a shell as that of this anti-tank gun, and I should not be surprised if its design is not changed—which will, of course, completely alter production figures.

The Americans also make a 37 mm. anti-aircraft gun—a " pom pom " which fires 120 shells a minute—and a number of these are now coming off the production lines of a Baltimore factory which before the war used to make piston rings, gas houses, and giant gates for dams.

They are quite good guns and orders have been given for more than 6000 of them. The desired rate of production for these is three hundred a month, but at the moment not more than 25 a month are being made.


CHRYSLER TANK FACTORY
FIRST ESSENTIALS MASS-PRODUCED ALONG HERE
CHASSIS MASS-PRODUCTION BELT
WHEELS PRODUCED ON THIS BELT
PLATES ETC. MADE ALONG HERE
FACTORY OCCUPIES 115 ACRES OF LAND NEAR DETROIT, AND EMPLOYS 10,000 MEN
FINAL ASSEMBLY LINES—LAMPS, SEATS, ETC.
SUB-ASSEMBLY LINES
FINAL ASSEMBLY LINE
IN
OUT
TRAINS WITH RAW MATERIALS FOR SUB ASSEMBLY LINES
COMPLETED TANKS HERE

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There is no later information other than the President's about the production of mortars and 90 mm. anti-aircraft guns. As far as other guns go, 105 mm. howitzers were being produced at the rate of 22 a month in July 1941, and production was expected to rise to 150 a month by the middle of 1942. Actually, the first model of this howitzer—it was designed to replace the famous French "75's"—was only turned out in its Milwaukee plant in May 1941, so the July rate can obviously be increased very soon.

O.P.M.—the United States Office of Production Management—announced in August 1941 that sixty-nine per cent. more machine guns were made in the second quarter of 1941 than the first—another figure which means precisely nothing. On the other hand, in June 1941, Mr A. R. Glancy, one of America's leading production men who was recently appointed by Roosevelt to tour Britain's war factories for co-operation purposes, said that factories in America were turning out *thirty thousand machine guns a month.* This seems an incredible figure. Is it true, or is it an error?

In September 1941, America had ten plants producing nothing but machine guns. One of the latest is at Buffalo—a plant costing a quarter of a million to erect, built specially for the British. It started producing machine guns in midsummer 1941, and employs five thousand men.

No production figures have been given, but it is a fairly simple matter to work them out. These five thousand men are at least working a 40-hour week (probably more), and since there are about two hundred man-hours of work in the construction of a machine gun *in this country*, it means that the Buffalo factory *alone* is turning out a thousand machine guns a week—say a minimum of four thousand a month. And that *is* a minimum, for I believe the hours worked may be longer, and the man-hours per gun in America much less, on account of mass production.

This is demonstrated by a subsidiary General Motors factory in Flint, Michigan, which used to make sparking-plugs, but now turns out machine guns as well and has gone to great pains in mass production methods. Instead of the old methods, this factory is now finishing small parts by the dozens, instead of hand-filing them singly. It can rifle forty barrels in the time

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it took to rifle one. And at the end of it, the guns come off the assembly line at the rate of three an hour. If those methods are employed in the Buffalo factory, the number of man-hours is going to be much less than two hundred.

Still, even taking the figure of four thousand guns a month from one factory, how many can the ten machine-gun factories of America turn out? Obviously not ten times as many because some of the factories may be smaller, but though I rather doubt Glancy's 30,000 a month, I do think 20,000 a month is a possible estimate—but that figure must include machine guns for land warfare, machine guns for aeroplanes (six or eight to a fighter, remember) and Tommy guns as well.

If America hopes to turn out, say two thousand fighter planes a month, that will mean about ten thousand machine guns for those planes alone, and it might be worth while mentioning here that the guns being fitted to the planes we receive are of a very high quality indeed. They are the result of a combination of British and American brains, and in the words of one man, make the old weapons on Hurricanes and Spitfires look like pop-guns. The guns on our fighters have been perfected only after long and rigorous testing. For hour after hour, in one factory alone, aeroplanes fitted with experimental guns made flights in which the guns were fired time and time again. At last a way was found to fit these more deadly guns on the light planes so that they could still fire accurately—no simple problem.

Britain has already received large numbers of Tommy guns—Thompson sub-machine guns—which are doubtless included in American estimates of machine-gun production. Thompson, I do know, can turn out well over five thousand a month of these handy weapons—weapons which cost £60 each, are only about two feet long, weigh 12½ lb., and can fire thirty rounds in four seconds. For some months, the *entire output* of five thousand a month was shipped straight to Britain. I believe a large percentage of the output is still being sent to this country, or to the Empire. There has been some danger of lack of ammunition, but I believe this bottleneck has been rectified.

American rifles—their Garand rifle is particularly good—are being produced at the rate of about 25,000 a month. Some of these are coming to Britain, I understand, though figures of

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the number are not published. The rate of production for Garand rifles will rise to well over 50,000 a month by July 1942 —though that figure includes, perhaps, certain other types of rifles shortly coming into mass production.

Some of these new rifles are now being produced in a big factory at Providence, Rhode Island, where, up to the end of August 1941, they had only existed in the experimental stage. This factory still bears, in huge letters, its peace-time sign: "Universal Winding Co.—World's Largest Manufacturers of Textile Winding Machinery." At the end of August 1941, the factory turned out its first rifle—only nine months after the change-over to war production had been started. The first batch of rifles was shipped straight to the Dutch East Indies for the use of the Dutch Empire troops there.

None of the leaders of this firm had ever made a gun before, but they called in experts and turned the textile tools to the production of gun parts. Nine months after starting, they had made and stocked 5300 finished barrels, 11,000 more barrels in process, and collected hundreds of thousands of other parts before the first gun was assembled.

And now, what about the ammunition for these guns, machine guns and rifles? Here are America's plans for the production of ammunition. The United States started off with plans for about thirty plants to make shells, powder, and all the chemical components of modern munitions. By June 1941, half of this programme was ready—and production *from that half alone* was estimated to be far more than America's highest production capacity in the last war.

The sort of firm turning out ammunition on the grand scale is the Ravenna Ordnance Works which was created in a year and went into production in August 1941. It is the greatest munitions plant in the world, with dispersed building covering *21,000 acres*.

Once the initial time lag has been passed, production figures leap up to stupendous heights. For instance, the Budd Wheel Company in Detroit took fifteen months to produce its first million shells—because of the tools and training needed. Now it is turning out a steady half a million shells a month. As for small ammunition, the American munitions industry estimates that, with its present capacity, it can turn out *every*

24 hours twenty-four million rounds of machine-gun and rifle ammunition.

Of course that, or half a million shells, is a fleabite to a modern army—but all the same, they take some producing. Here is a way of illustrating this. A battery of four American 3-inch anti-aircraft guns fire a hundred rounds a minute, each shell costing about £4 10*s*. To fire this battery of guns for an hour costs £26,844. If a man earns four shillings an hour, the firing represents the productive labour of 134,000 men. Is that clear? Now, the great Ford factory in Detroit employs a hundred thousand men. So if Ford increased his payroll by thirty-four per cent. he could just keep that one battery of guns going!

Britain is getting a fair amount of ammunition, though I can only trace actual figures of two quantities. In July 1941, America sent us £3,800,000 worth of .22 calibre ammunition. In one three months alone this year, under the Lease-Lend Act only (nothing to do with cash orders) we received ammunition worth £2,440,000. Remembering that bullets cost roughly £1 per hundred, anti-tank shells are twenty-five shillings each, and 75 mm. shells are £2, 15s., the figure represents:

100 million rounds of bullets,
470,000 anti-tank shells,
463,700 75 mm. shells.

But though all the guns and ammunition we have been discussing in this chapter are of course important to us, it must not be forgotten that when the war broke out, Britain did at least have an armaments and munitions industry of her own—an example is the great Vickers Corporation which was able to go on to large-scale production of munitions as soon as the government gave the word.

The percentage of America's current output which we are actually receiving is very difficult to ascertain, but in a way it does not matter. I feel that once we see that America *can* produce quantities of various arms, then the amount which Britain receives rests entirely on our needs—and the least important of these are munitions. We have a small arms industry and at present our urgent cry is for planes, tanks, ships. If we were suddenly left without machine guns and rifles, then

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it would be fairly simple for America to increase the proportion of these supplies. The main point is production, because the one certain thing to remember is that if America *can't* produce, then we get—nothing. That was why, at the beginning of 1941, so little came over the Atlantic. That was why, after Dunkirk, when the need was so desperate that a week's delay was agonisingly dangerous, America could only respond to our urgent appeal by sending old, discarded materials.

Valuable they were, but it cannot be denied that they were very old, for just after Dunkirk, America sent us :

895	75 mm. guns,
865,000	used Enfield rifles,
24,000	old-style machine guns,
62,000	obsolete air-type machine guns,
25,000	old Browning rifles.

Yes, they were very useful. But if *now* we were suddenly faced with another Dunkirk, if now our army was left with nothing but wooden training dummies and broomsticks, the goods we should get from America would be very different indeed.

There would be vast supplies of small arms which we are not getting simply because we prefer *other forms of aid*—tanks and planes, merchant ships—and food. For these are the sinews of war we need most. These are the weapons we must have at all costs—the goods which America can let us have because of her vastly superior raw material position.

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CHAPTER V

FOOD

FOOD is as much a weapon of war as any tank or any aeroplane. Without it the besieged garrison must starve or surrender. Without it besieged Britain must starve or surrender. And what Britain cannot, or will not, grow or produce herself must be obtained elsewhere.

Food is, indeed, the basic need of a country, and the question of America's food resources is a matter of paramount importance not only to us, but to America herself if she should be involved in war. Indeed, the whole problem of aid to Britain would have been very different if America had not had great food resources, and in this chapter we want to discuss how much the United States has of the primary food products of the world—bread, meat, eggs, milk and so on. Then, having analysed this, and seen how she would be placed in the event of war (when food immediately becomes a fighting weapon) we will see how much of this food supply is, and can be, sent to Britain.

America produces a quarter of the world's pork, a tenth of its beef, a tenth of its mutton, a tenth of its fish. She produces fourteen per cent. of the world's wheat, and the same proportion of the world's sugar beet, though her production of cane sugar is small. Tea production is negligible, but when we come to butter, America produces a third of the world's supply, together with a quarter of its cheese, and forty per cent. of its eggs. Her milk production is excellent—a tenth of the world's cattle graze on American land—and her climate makes the growing of all vegetables a simple affair.

I do not propose to give you in detail the actual quantities of all these essential commodities, for millions of tons of butter convey little in the way of knowledge. The main point is that the United States has a larger agricultural output than any other country in the world. She is the leading producer of dairy products, and second or third in the world of many other staple foods, including meat and wheat.

A quarter of her population are engaged in agricultural pursuits, and—vitally important if this war should be prolonged—her food industry is capable of great expansion.

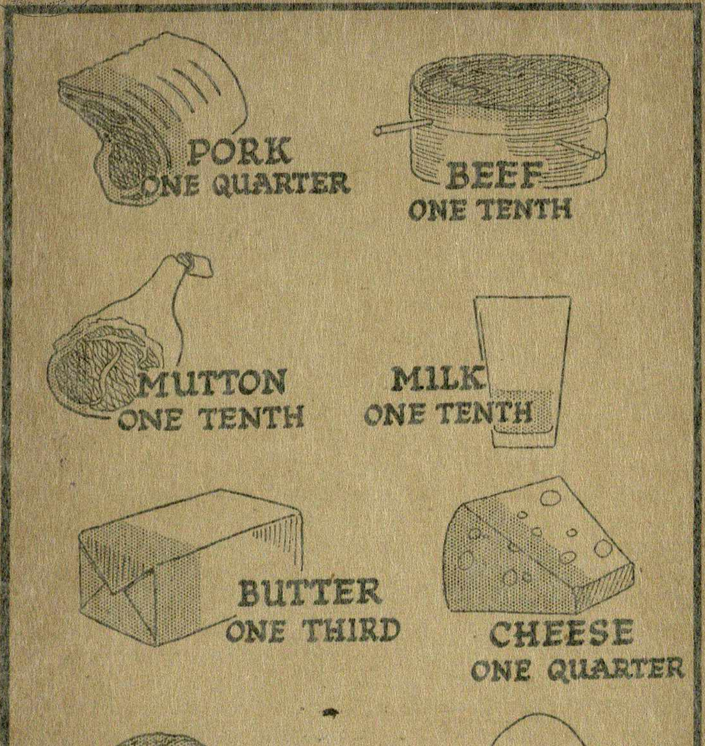
Indeed, this expansion is an important point, because the picture you usually get of the American food front is of a mighty meat-packing plant in Chicago where the doleful bullock walks in at one end and is trundled out at the other end, complete with tin round that portion of his body fit for human consumption. Or else, perhaps, of vast expanses of wheat, with multiple-tractors reaping the harvest in record time. In other words modernised food production. And that picture is wrong. The industry for dealing with the products of the farms may be reasonably well advanced. Meat packing may be a highly efficient undertaking, but when you come to the farms themselves, the story is very different. The great farms with their modern equipment do exist, of course, but only in certain areas, and only in a certain proportion.

Out of every hundred farms dotted about the countryside of America, *only sixteen have electricity*. Out of every hundred farms in the United States, *only fourteen have a tractor on the land.* The rest—they rely on the muscle of the farmer's fore-arm and the strength of his literal horse-power.

This is not a feature to be found over the whole country of course, for certain backward districts affect the picture as a whole, and deteriorate from the good districts when you are working out averages ; but that anyway is the average.

In the Middle States, where a third of the agricultural population of the United States live, you get excellent prosperous conditions, while if you go further west to California, you get great sweeping farms, a wonderful climate, and a very large yield to the acre, particularly of fruits.

But if you go to the southern region, the average size of a farm is a bare 71 acres—incredibly small when you think of the great spaces of the United States. Many of these farmers use methods primitive in the extreme. Hundreds of thousands of desperately poor white tenant farmers just manage to survive, looking after their crops. This surely is important to remember when considering America's food—and ours, because it means



Staple Foods—and the Proportions America Produces

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that the industry *is*, unquestionably, capable of expansion. For there are about 6,288,000 farms in America—and more than five million of them have never had a tractor or have no electricity.

Still, even now, that scene is changing. American farmers are getting a "New Deal" just as British farmers are getting help. All the sudden demand for export to Britain has meant not only a change in our meals, but a drastic alteration in the life of the American farmer, which may well change his destiny in the future—for with typical American foresight and shrewdness, agricultural experts in the United States have started to change crops and specialise on the assumption that they will not only have to feed many of us through this war, but that Europe will need millions of square meals after the armistice is signed.

As soon as it became obvious that we needed food on a large scale, American authorities mobilised the industry. To that section of the United States known as the corn and hog belt—the huge mass of land below the Canadian border where farmers grow maize and use it to raise pigs—the order went out for them to keep back the pigs they were just about to send to market and breed more young pigs instead. They were also asked to make every market pig ten pounds heavier. This second step alone meant increasing America's supply of pork by five hundred million pounds.

A similar order for expansion went out to all the poultry farmers. They were asked to increase America's production of eggs by thirty million. They were asked to keep back the hens that were ready for market, and the Government guaranteed that they would make more money by getting eggs than by selling the birds for poultry.

Then the cattle men got their orders. The dairymen were asked not only to increase the number of cows on their farms, but to see that the cows had a diet which would, in the long run, affect our diet. By feeding cows on specially prepared concentrates (which the Government sold at a paying price), a cow that yielded three gallons of milk was made to yield four. Now, America's yield of milk is the highest in her history.

So the first steps were taken—months ago. And once mobilised, aid for Britain was easy. Now, how have these early steps affected us? What sort of food is Britain getting at present from America? And—how much?

Britain has been promised by the end of June 1942, food from America worth £250,000,000. Latest figures—September 1941—show that food worth £500,000 is being sent to Britain *every day*. Day in, day out, that is the average. And that, presumably, is as much as we require, or as much as we have shipping space for, because in June 1941, Roosevelt said that food was being sent to this country on a monthly quota "as much as the British can take."

This daily sum of half a million pounds is being spent by the United States government under the Lease-Lend legislation, and it was stated in Washington in September 1941, that exports of food to Britain were likely to be increased in the future. The prices we pay for the various types of food are not known, but when we consider that the cost of 'iron rations' for this besieged island works out at about 10*s.* per person per week [1] it means that, even using retail prices, America sends us enough food *every week* to feed seven million people—enough, almost, to feed London on 'iron rations.' Actually, the figure is even greater, for we can only make a calculation on retail prices, whereas we buy at wholesale prices.

But is it quite so simple as that? America doesn't, of course, actually send complete meals for the whole of London every week; but, even so, if she sends us, say, a lot of cheese, that allows us to have more milk. If she sends us beans, then we can grow some other crop. It does, in theory, work out at just the same as complete meals, providing always that the goods we receive are *not those which we can produce enough of ourselves.*

At the outbreak of war America unquestionably had large stocks of certain commodities which we could have had immediately had we wished. We did not take them. It is no good taking potatoes to Newcastle. Fortunately, the Anglo-American food programme is being run by intelligent men who have realised right from the start that only food of the highest nutritive value was of any real interest to us. Otherwise—use the space for munitions of war, instead of munitions of the body.

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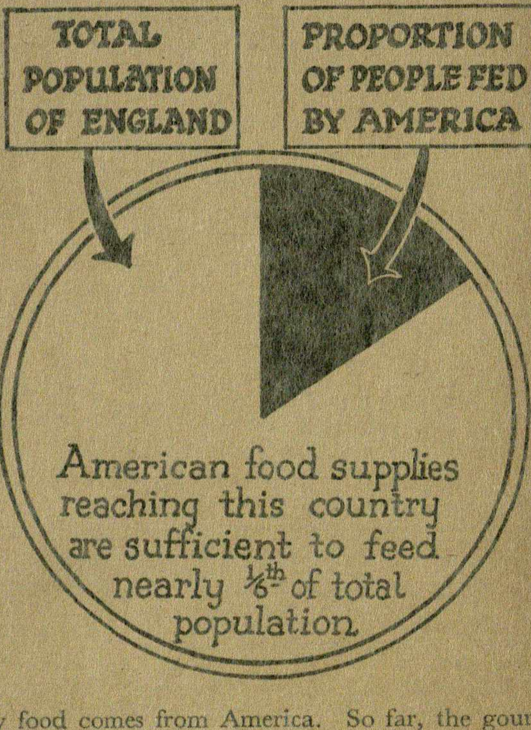
[1] This figure can be calculated a number of ways. The 1938 cost of food figure for industrial workers was 34*s.* 6*d.* for a family of 3.5. The cost of living index was then 146. It has now risen to 166, which gives you a war-time figure of 10*s.* 5½*d.* per person. Or else—rationed goods which we can buy per week are (roughly): meat 1*s.* 2*d.*, sugar 2*d.*, butter or fats 6*d.*, tea 3*d.*, plus average consumption of basic foods such as bread 8½*d.*, milk 1*s.* 4*d.*, fish 6*d.*, potatoes 4½*d.*—a total of 5*s.* Fruit, vegetables, cooked meats and other food could still be bought, if things got really bad, for 5*s.*, making 10*s.* Please note, I do *not* say this is ideal or even necessary. I only say we *could* live on this.



No fancy food comes from America. So far, the gourmet has had to rely for his delicacies on private parcels sent either by American friends, or, perhaps, British people who feel that their proper place is in America.

Britain's most urgent needs are, I suppose, meat, fruit juices and dairy produce. It was estimated in September 1941, that our production of milk during the depth of the winter would be

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twenty per cent. below normal, that of meat forty per cent. below normal, and eggs seventy-five per cent. below normal.

Here are the figures of what we are getting from America—figures which I have been permitted to see of August 1941 shipments. None of these figures has dropped, and it is distinctly possible that some may have been substantially increased. We are now getting about 15,000 tons of tinned meat a month, and about 10,000 tons a month of cured pork. The pork figure will shortly be increased. What is more, it is pork that British people like. It is chopped up, packed in neat little containers and eighty per cent. of it—a very high proportion—is lean.

Dairy produce is a bright spot. Present cheese shipments are at the rate of about 4000 tons a month—monthly rations for *nearly eighteen million people*—and this figure will be stepped up to 10,000 tons a month as soon as America has better storage facilities. We are also getting 600,000 barrels of evaporated milk a month—half a cwt. or one cwt. to the barrel ; two oz. of the powder will make one pint of milk. The milk figure was estimated to increase considerably for the middle of the 1941 winter. Britain is very short of cooking fats, and lard is coming over at the rate of about 25,000 tons a month—very good lard, a lot of it packed in 56-lb. tin containers.

Figures are not available for all shipments—particularly detailed shipments of fruit and fruit juices—but America is also sending large quantities of prepared cereals, and about ten thousand tons a month of corn starch, together with large quantities of corn sugar. Tinned potatoes and other tinned vegetables—happily not ‘ luxury vegetables ’—are also coming—229,000 cases of tinned potatoes alone have been ordered by the British authorities, while it has been stated that we could do with six million cases of tomatoes (though it is doubtful whether all these are available).

America is also ready to supply us with at least fifty thousand tons of currants and raisins, and twenty thousand tons of apples, unless we get these from Australia and New Zealand—always a difficult problem, getting food from the far corners of the Empire, because the one ship carrying the food could have made so many more trips to America and back in the same time.

The amount of jam we are getting is satisfactory, too—though we do not get the actual jam. Large quantities of fruit—too small and unsuitable for tinning—have been sent to this country in barrels, and made into jam when it reached Britain.

These figures are extremely promising. They indicate clearly that America is fully alive to the food situation in this country—a situation we are apt to think least about when considering American aid to Britain. The photogenic aeroplane or the picturesque tank is much more likely to be in the news or pictures than the barrel of evaporated milk.

As for the grand total of all this aid—well, in the Spring of 1941, the United States Agricultural Department estimated that Britain would have £100,000,000 worth of food in the fifteen months ending July 1942. Officials later thought that £125,000,000 was nearer the mark. Then in September 1941, a Washington official said that more than £150,000,000 worth of food would reach Britain *within twelve months.*

Actually, the main plans for 1942 have been laid—and laid very thoroughly—by Mr Claude Wickard, America's Secretary for Agriculture. He has mobilised America's food strength on the assumption that it will have to feed about ten million British people throughout 1942—almost a quarter of our population.

Whether this is too ambitious a programme remains to be seen—it does not seem an unduly high step-up from the figures which I worked out earlier in this chapter. But, anyway, these are the main items of food which America is going to send us in 1942 :

500	million	dozen eggs,
18	,,	lb. of poultry meat,
1350	,,	lb. of pork,
640	,,	lb. of lard,
125	,,	tins of fruit,
2½	,,	cases of tinned vegetables.

Just one simple indication of the value of these articles—the eggs alone amount to about a dozen per person per month, though they will not all be shared out like that, of course. Many powdered eggs go straight into factories manufacturing foods—but they will mean bigger rations of English eggs.

The delivery by sea of this gastronomic potage is a problem

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which resolves itself into compressing the maximum amount of food into the minimum of space. Condensed foods of all kinds are being sent in preference to bulkier types, and for months British and American experts have been working together in Washington choosing food of the greatest nutritive value for the amount of shipping space available.

It is not an easy problem to solve. Meat, for instance, takes the least space if pressed and refrigerated—yet a great proportion of our supplies come in tins—due entirely to the scarcity of refrigerator space in our cargo ships. This has meant a certain delay in supplies reaching this country—now fortunately overcome—because American packers have concentrated on refrigeration in recent years.

But once solved, it is well worth it. A food ship arriving in Britain in peace time, or even in the early days of war, might have kept a thousand people for three months. Now, that same ship, packed with concentrated, vitally necessary foods, would keep the same number of people five times as long.

The main concentrated foods we are getting are powdered milk, dried eggs, beans, lard, cheese, fish, oil, and a certain proportion of fruit juices—not as many as we shall get in the future because there are quite a lot of preliminaries before juices of various fruits can be extracted on a large scale.

Powdered milk, of course, is highly concentrated. The Americans call it " dry skim milk," and it is reduced to powder merely by extracting the water. The shipping space required is so small, compared with ordinary milk, that a five thousand ton cargo on an average steamer would keep six million people supplied with milk for a month at half a pint a day.

Fruit juices are beginning to come, though not in large quantities yet. The first consignment of 35,000 crates of grape fruit juice from Texas was shipped early in 1941, and was regarded as a concentrated foodstuff because of its high vitamin content. The oranges of California—1941 was a record crop year—were nearly all sent to Britain after concentration so as to take the smallest possible shipping space.

Here again, space is well worth saving. The average shipment of oranges consists of twenty thousand cases of 175 oranges each—a bare two and a half million oranges. When you consider that it takes the juice of five or six oranges to fill an ordinary

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household tumbler, you get some idea of the space that can be saved by concentration—instead of two and a half million oranges, only about 26,000 gallons.

And there is no end to this concentration. Dried bananas have been imported to this country (not from America) on a very small scale, and they take up exactly a tenth of the space of green bananas.

Dried apples, apricots, prunes have come from the United States. The important point to remember, of course, is that though these dried fruits do not taste the same as fresh ones, the food value is just as good. The difference is not the difference between chalk and cheese, but between milk and cheese.

Again, to economise in shipping space, Britain is getting hundreds of tons of dried eggs instead of the eggs in their shells. The food value is just as good as in the normal egg, but the space saved is colossal. Some of our eggs come straight from the hen, but we are actually getting eggs in eight different ways—some are dipped in oil, some are powdered, some have yolks separated from the whites, and so on.

In August 1941, America sent us a million food tablets, some of which are being used as an experiment on British schoolchildren. They are a new 'multiple' type of vitamin concentrate evolved by a California professor of biochemistry, and contain vitamins A, B, B2, C, D. They are definitely *not* a medicine, but pure, concentrated food.

London County Council doctors completed a scheme in August to test the effects of a daily dose of these tablets with certain children's morning school milk. Some children had the pill, some did not. Results of any differences between the two classes of children have not yet been made known.

There is no limit to the food we can get from the United States. It is one of her strongest weapons of war, and provided the ships are there—provided, too, that we can stop those ships being sunk—then Britain can never starve. America is the modern Canaan, the land of milk and honey. Food and drink are there in abundance. And it is this fruitful, peaceful yield of the soil—the yield of cattle grazing in Arizona or the fruit trees of California or the waving sunlit corn of the Middle States—it is this which may well beat Hitler Germany. For Hitler's

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main object in the Battle of the Atlantic has always been to starve us out. He can never do it.

MAN BEHIND THE SCENES

Claude Raymond Wickard, United States Secretary for Agriculture, is a farmer—a hog farmer with an Indiana accent, a rich baritone voice, apple cheeks and a red-neck colour that will last him until the day he dies.

Fortunately he is a good farmer—for on this man's shoulders depend the supplies of foodstuffs to Britain. You have read how he has marshalled the forces of agriculture to fight the battle of the food front, how he has turned the plough and the reaper and the mowing machine into weapons of war as vital as tanks and aeroplanes. It is only because Wickard is a practical farmer that he has been able to do this. He can cut his way through any red-tape tangle, through top-heavy organisation, and go to the farmer or the dairyman or the poultryman, and say : "Look friend—I know all about this business. I've been through it myself." And then, in a few clear concise phrases, tell the farmer just what he wants the farmer to do for him, and how he is to do it.

Wickard's father and grandfather farmed the same soil that he farms now, but in early life Claude decided that scientific agriculture was the only way to make the old farm show a dividend. To the horror of the farming community who had respected the Wickards for generations, Claude shot off to a university to learn all about the science of the soil.

The neighbours were even more horrified when he came back in 1915, for he promptly started to kill all the soil that was not producing enough in the way of crops. He killed it dead, strewed it with special substances, and started all over again.

The effect was astonishing. He won all sorts of competitions. He won ten gold medals for growing a hundred bushels to the acre on his cornfields. He added another half a dozen medals for rearing heavyweight hogs. In five years, he paid off the mortgage of more than a thousand pounds on the ancestral farm, and added another hundred acres (paid for) to it. He also got married.

Then his horizon began to grow. He began to lecture, to

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advise his fellow-farmers when they had knotty problems. He was that rare combination—a practical farmer, an idealist, and a theoretical know-all. Soon he became deputy president of the County Farm Bureau, and started and headed a co-operative system for farmers that made great strides in his home state. At last in 1932, he was persuaded to run for the State Senate.

He did run—and was easily elected, mainly by the farmers he had helped for years. From there it was not a long way to a full-time job in Washington—with just enough time off for him to make periodical visits to the old farm and see that it was running properly.

Now he stands at the head of America's food front—and a fine job he is doing there. He is a really honest, sincere man—no professional politician, of course—who is desperately anxious to serve his country, and ours too, to the best of his ability.

He has the heartiest laugh, the most cheerful guffaw, in the American political world. He has—thank goodness—retained all his original love of the country and all it represents. He still likes to talk about hogs and porkers and corn and feeding stuffs. He still likes long rambling jokes with a country flavour. He still retains the canny instincts of the farmer who knows that tomorrow may change his whole life. For instance, when he and his wife moved in to a larger apartment, they were most careful to choose carpets that could be cut down and used in a smaller flat or house if necessary. At the old farm the antimacassars and furniture that the first Andrew Jackson Wickard bought are still doing service.

Perhaps Wickard's greatest job has been, not to produce more food for America, but to arrange skilfully proper co-operation between America and Britain. As head of the Anglo-American Food Committee, which meets nearly every day in his office, he has smoothed out most of the difficulties—and difficulties there were until Britain sent the right people to join the Committee. But Wickard has made quite certain that there is not the faintest possibility of Britain getting the foods it does not need, and thus wasting valuable shipping space.

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CHAPTER VI

UNDECLARED WAR

In the last five chapters we have travelled a road studded liberally with figures and statistics. We have analysed the production of all America's different war materials, we have seen how she is placed in minerals, in food—in fact, in all her natural resources.

The time has now come to bring all these figures together. In this chapter, I want to do three things. I want to re-state, briefly, the main points of the information we have gathered; then to give in detail facts about one branch of help which we have not so far discussed—voluntary help, like that of the American Red Cross, which has not been dealt with because it is not productive help in the sense we are using the word. Lastly, I feel we should have, very briefly, a simple explanation of the Lease-Lend Act—what it means, why it has been necessary, and the events which led up to it.

First then, what have we learned so far? Let us group our facts so that we can see them at a glance.

Raw Materials

In five of the six basic materials of modern industry America is well supplied. She produces a third of the world's copper, a third of its coal, more than a third of its iron, half of its cotton, sixty per cent. of its oil. Only in rubber is she dependent on outside sources.

She lags behind in the production of aluminium, but is quite capable of increasing her capacity. She has a great abundance of steel, but she does lack certain of the special alloy metals needed to toughen steel. She is short of rubber.

Air Production

America's production of planes in the first eight months of 1941 was 10,627, with a total estimated output for the year of

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nineteen thousand. We received in the first eight months of 1941 nearly five thousand planes, with a large percentage increase expected in the last four months of the year.

Between the beginning of the war and the end of August 1941, the Empire received about seven thousand planes. American production for 1942 should be in the region of thirty thousand machines of all types.

SHIPPING

Roughly speaking, America is now producing one ship every two days. Her hopes for 1942 were to produce two ships every one day. Production for 1941 was at least 1,250,000 tons, and this figure was estimated to rise to 2,500,000 tons in 1942, and five million tons in 1943. But even this figure may be insufficient if there are long, sustained periods of sinkings like the worst we experienced in 1941. We must not bank on lulls in the Battle of the Atlantic like the ones we were fortunate enough to get in 1941.

TANKS

In the Autumn of 1941, America's production of tanks was about four hundred a month—260 light tanks, and 140 medium tanks. No real heavy tanks are being made, though the medium tanks, which weigh 28 tons have fire-power and armour better than one would expect in a tank of that size. Britain's share of these is in the neighbourhood of two hundred a month—and nearly all of them are going to the Middle East, so that British production can be kept in this country. Tank output should be 800 a month by the middle of 1942.

GUNS

Latest figures show that about three hundred 35 mm. anti-tank guns are being made per month ; more than three hundred mortars a month ; about ninety anti-aircraft guns a month of different types. Production of machine guns is estimated at about twenty thousand a month, though that figure includes sub-machine guns. Rifles are being produced at the rate of about twenty-five thousand a month.

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FOOD

America is remarkably well-placed for food, particularly agricultural products, though her farming industry is capable of large expansion. Britain is getting about £500,000 worth of food a day from the United States—a sum that works out at almost enough to keep London on 'iron rations.' Chief needs which are being supplied are evaporated milk, and other dairy produce, meat and fruit juices.

There, very briefly, you have the principal figures of production. Now for the figures of the aid we have received from private sources in the United States—by private sources, I mean private bodies whose work and income is mainly voluntary. I quite agree that this may have little to do with the strength and productive capacity of the United States, but the *amount* we have received is so staggering—and to my mind such an indication of American sympathy—that I feel it should be included to complete the "aid to Britain" side of this volume.

The American Red Cross is by far the biggest organisation of this kind, and up to June 30, 1941, it had sent to Britain *gifts* worth a total of £6,335,000—all for relief in this country. On an average, *six ships a week* are now coming from America to Britain, laden *only* with Red Cross goods.

Up to the end of June 1941, 323 vessels had brought Red Cross goods to Britain—and six ships a week were coming after that. This figure is for Britain and Britain only. It does *not* include the Empire. To the Middle East alone, goods worth more than half a million pounds sterling have been shipped.

So far, fourteen million surgical dressings have been sent by the American Red Cross. Women volunteers in America have made about four million garments of all kinds, together with more than three hundred thousand layettes—each consisting of twenty pieces.

They have also given considerable help to British and Allied prisoners of war. Figures I have seen show that *in one month alone*—a typical month—the International Red Cross Committee in Geneva received from the American Red Cross a hundred

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thousand food parcels, seven thousand pairs of shoes, three hundred thousand bars of soap, forty-six thousand woollen garments, seven thousand suits of underwear—all for our prisoners in German camps. The food parcels alone contain evaporated milk, hard-tack, cheese, cocoa, sardines, pork meat, corned beef, chocolate, sugar, dried fruit, cigarettes.

In Britain there is now a fleet of 435 vehicles of all sorts which have been presented to us by the American Red Cross. There are 150 ambulances, which are operated by the British Red Cross and the American Ambulance; sixty motor cycles, twenty-five station waggons, fifteen trucks, 126 mobile canteens, and more than fifty delivery vans.

We have also had from the American Red Cross fifty special refrigerators specially constructed for the storage of blood plasma for our transfusion service.

All this means a great deal of work at the other end—in America. And that work is voluntary—the help of one friend to another in the hour of need. The American Red Cross has nearly ten million volunteers, working in more than three thousand Red Cross centres covering every state, city, town and village in the United States. Even the children, through the Junior Red Cross, are doing their bit.

Then there is the British War Relief Society, which has sent to Britain hundreds of cases of supplies, plus huge sums in actual cash. They have also given us mobile canteens—and they pay for running them. This Society has seven hundred branches throughout the United States with 75,000 full-time members and well over a million part-time volunteers.

There are hundreds and hundreds of smaller organisations. There have been hundreds of thousands of Bundles for Britain, while there are also little societies that work in their own centre and send beautifully packed parcels to whatever British Institution they think needy. Perhaps I can give you a picture of the *feeling* for Britain that must exist in so many American towns, by quoting an extract from a letter from a Mrs Evelyn Yorke of Beaver Falls, a small town of 17,000 people—about the size of Durham. It arrived at my office in the summer of 1941. Mrs Yorke is a reader of the newspaper of which I am editor, and which has a great following and circulation in the United States. This is what she said:

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"I thought it might interest you to know that there is a British Empire War Veterans' Post here to which my husband belongs. There are about 60 members in the district, so you see that in their way, they are still carrying on.

"We feel that while we are not in Britain, at least we are helping to do what we can to help those at home, and in eight months we have made 2747 pieces of knitted goods, and turned into headquarters 204 boxes of used clothing, 842 coats, as well as shoes, toys, dolls, etc. We have also bought 11 cots at 40 dollars each, and raised 2450 dollars in memberships and donations.

"This money is used for the purchase of wool, medical and surgical supplies, ambulances, etc., and other necessities for the relief of suffering civilians in bombed areas. All of these items are purchased in the U.S.A. We are now making tentative plans to raise sufficient funds to purchase mobile canteens."

And as well as all this, there are thousands and thousands of individuals who perform amazing deeds of generosity—usually, being Americans, on the grand scale. Just one example. A woman in Chicago heard (quite wrongly) that men in this country who had been bombed out were wearing women's clothes because Britain had run out of male attire! She made no bones about her aid. Promptly she went out and ordered—for British men—five thousand pairs of socks, 48 dozen top coats and 48 dozen suits. There's something to be said for rumour. . . .

How easy it would have been for America—a long way away from the war—to have helped us on a strictly business basis. How easy it would have been for America to stick to the "cash and carry" system. How easy to have helped us to the limit not of *her* capacity, but of *our* capacity. Our capacity to buy—a woefully small capacity, compared with the avaricious appetite of the modern war machine.

The volume of aid is all the more remarkable when you consider the elements that go to make up America's polyglot population. Think of the men and women born in Germany and Italy who are, even now, paying taxes to lend war machines to Britain to fight and destroy the armies of the lands of their birth.

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The last figures issued by the United States Bureau of the Census showed these remarkable totals of foreign-born people—not aliens—in the United States. They are Americans now—but they were born abroad :

Britain . . .	1,402,052
Eire	744,810
Norway, Sweden, Denmark . .	1,122,576
Germany . .	1,608,814
Poland . .	1,268,583
Czecho-Slovakia .	491,638
Austria . .	370,914
Hungary . .	274,450
Russia . . .	1,153,628
Italy . . .	1,790,429

Fortunately, as these figures show, a lot of these were born in countries sympathetic to us, but still, New York alone has nearly a quarter of a million German-born Americans and nearly half a million Italian-born Americans. Chicago has nearly a hundred thousand of each. Detroit has thirty-two thousand German-borns, and nearly twenty-eight thousand people who were born in Italy.

Yet the aid still comes—expressions of *personal* sympathy which are the true reflection of America's *national*, *governmental* sympathy. The sympathy which led to the passing of the Lease-Lend Act—the act which we have mentioned so often in this book. Just how did this act come into being? Just what does it mean? Let us follow this "invisible" line of strength by which America has taken step after step, without declaring war, to aid the democracies in their fight against what we call with such masterly understatement "aggressor nations."

The Lease-Lend Act, passed in March 1941, was really the beginning not of a new phase of production, but of a new era in practical help for Britain. America had started stepping-up production before it was passed. America had also a serious feeling of doubt as to whether Britain could hold out—whether, in fact, it was worth while sending any arms to Britain simply for them to be swallowed up quickly in a decisive Hitler victory.

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That feeling must have been quite understandable, if it existed—I am told that it did. But it went long before the Lease-Lend Act was passed. It went during the Battle of Britain.

Even so, without the Lease-Lend Act, things might have been very different today and tomorrow. . . . And you could not blame the Americans if they felt a little chary of selling us armaments on credit.

In the last war, America lent Britain £1,000,000,000. After the war, we found it impossible to repay the large sums involved. So—we didn't. Naturally, there existed in America a sense of grievance, to say the least of it. That sense of grievance found its way into a number of cautious acts which were formulated for the express purpose of seeing that America was not put in the same position again. The Johnson Act flatly stated that debtors who had defaulted in their war debts (us) could not borrow again. The Neutrality Acts went even further, by preventing America from supplying any war goods to any country at war.

That was how we stood when war broke out. Fortunately for us, America can tear up scraps of paper—the right scraps of paper. A month after war was declared, Roosevelt amended the Neutrality Acts so that the countries at war could buy arms *if they paid cash and fetched them*—that was the famous ' cash and carry ' clause. It was only because we commanded the seas that it benefited us. In theory, Germany could buy arms from America as well as ourselves. In practice, they could not fetch them. If they had been able to fetch, the amendment would doubtless have been phrased differently.

But how were we to get the money ? When war broke out we had assets in America worth about £896,000,000. By the end of 1940, *half of this sum had gone*—and the rate of spending would have finished the lot in another twelve months.

After that—no cheque, no arms. No cash, no aeroplanes ; no dollars, no tanks. Then came the Lease-Lend Act which, in a few words, amounts to this : The President can lease or lend articles to any country whose defence is vital to the future of the United States.

Instead of borrowing the money itself, we borrow the actual goods. They are a loan, not a gift. After the war, we must repay—in the actual words of the President " in kind or property or any other direct or indirect benefit which the President deems satisfactory."

Throughout this book, I have purposely fought shy of long lists of astronomical figures, but I think we should record one here. The first appropriation under the Lease-Lend Act was for the colossal sum of seven thousand million dollars—£1,750,000,000—an indication of the scale in which aid will be provided—for remember *not much Lease-Lend material is reaching us yet.* The goods we are getting *now* (with the exception of food) are goods we ordered before Dunkirk *and paid for in cash*—they are coming now because of the delay in executing our orders, due to the need for stepping-up production.

But here is how the Lease-Lend money is to be spent—in other words, we shall borrow goods of various categories to the value of these figures, which I have given in dollars.

	dollars
Ordnance and ordnance stores	1343 million
Aircraft	2054 ,,
Tanks, armoured cars	362 ,,
Ships	629 ,,
Miscellaneous equipment	260 ,,
Facilities and equipment for the manufacture of defence articles	752 ,,
Agricultural, industrial and other commodities	1350 ,,
Testing, fitting out or repairing any defence articles	200 ,,
Services and expenses for carrying out unspecified portions of the programme	40 ,,
Administrative expenses	20 ,,
Total	7010 million

So far, nothing has been said about repaying the goods which we get under Lease-Lend administration, and they will doubtless present serious difficulties. How, for instance, shall we repay the food we have eaten?

It was stated in the United States House of Representatives in September 1941 that the basis of discussions with Britain for

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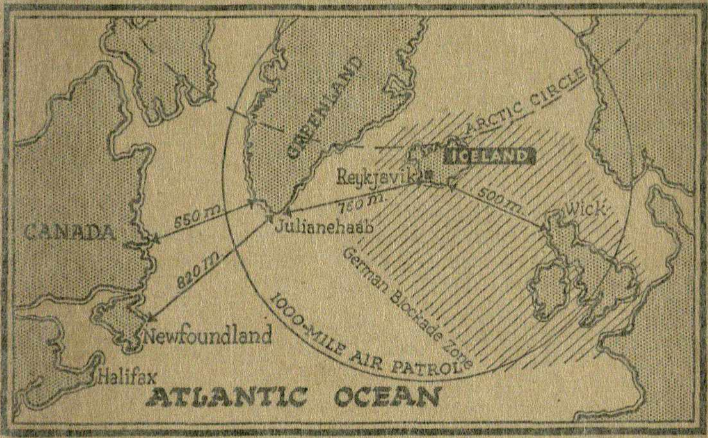
the repayment of Lease-Lend supplies had "reached a point where Britain could be asked how she felt about them." But what those points were was not disclosed.

But even the Lease-Lend Act was not to be the end. (Who knows what may have happened in the very brief time between the completion and publication of this book?) All through this volume, we have stressed the materials we were receiving. There is one other great help which must not be forgotten. When the Lease-Lend Act was passed, "cash" was omitted from "cash and carry." But we still had to carry. American ships could not enter war zones. Now that has changed. On November 13, 1941, the Neutrality Act Revision Bill was passed.



THE STRATEGIC IMPORTANCE OF ICELAND

Before that came the Neutrality Patrol. Since April 1941 the American Navy has patrolled great areas of the Atlantic, warning our ships of raiders, U-boats or aeroplanes.

Then, the same month, America took over Greenland, in which it was specifically stated that landing fields for planes and harbour facilities for vessels would be available for *all American nations*—and that includes Canada.

In July 1941 American troops landed in Iceland. The presence of that token force immediately extended the American

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sphere of influence. It meant at once that the Neutrality Patrol now extended from the United States to Iceland—and vast portions of the Atlantic west of that important little island which has served us so much better than neutrality.

The effect of this has been obvious. On August 15, 1941, Colonel Knox, the United States Navy Secretary, announced that since United States patrols had started operating between America and Iceland, the sinking of supplies for Britain had entirely ceased in that area.

So, without firing a single shot, America has for months been making sure that the weapons of war get to Britain. Then the Neutrality Act was revised on November 14, so that American ships can carry cargoes direct to British and Russian ports. This great decision virtually adds at least twelve million tons of shipping to our resources—the pre-war total of the American Mercantile Marine. (The figure has obviously been increased since then.)

American ships can now not only sail to Britain; they can sail through the Mediterranean with American supplies to the Middle East. They can relieve our overburdened shipping. In other words, like a good manufacturer, America can deliver the goods.

MEN BEHIND THE SCENES

Harry Hopkins—friend of Roosevelt and friend of Britain—is the general manager of Lease-Lend Unlimited. His official title is Administrator of the Lease-Lend Act, and he is tall, slim and undemonstrative, with a rather slow way of talking, a thoughtful voice, and a dry and subtle humour. You notice his eyes at once—reliable, steady, observant, with a sparkle that comes out as soon as he begins to talk. When he speaks in public, he rarely prepares the words he says—but he always says just what he means in his soft, musical drawl.

He is one of Roosevelt's few intimate friends, and the President thinks so much of him that Hopkins is now living at the White House with his daughter—his wife died some years ago.

Hopkins is fifty-one and was born at Sioux, the son of a saddler. Since that time, he has had a career of top-notch diplomacy. He has met and talked with the highest figures of almost every country; more than any other American he has been able to see for himself the events leading up to the present war-torn world. He has personally watched the shape of things to come. Yet his first job was as a worker with the Association for Improving Conditions of the Poor. Other social work followed, and it was not until 1931 that he came under the star of Roosevelt, who made him executive director of the temporary Emergency Relief Administration.

This was a big job, with nearly a million names on the relief payroll, and from it Hopkins moved to the job of Federal Relief Administrator—with the sum of five hundred million dollars to distribute as he thought fit.

A few years of that and his health broke down. His wife died, and Hopkins had never been strong anyway. He resigned, and little more was heard of him until May 1940, when the war outlook began to look really black for Britain.

Already Roosevelt was planning aid for Britain on a gigantic scale, though there were obstacles to be overcome—domestic Congressional obstacles—and the famous Lease-Lend Bill had never been thought about. Hopkins was invited to the White House for the week-end. He went—for the week-end. He has stayed there ever since, except for his trips abroad.

At the White House, fresh and eager from his retirement, Hopkins became a sort of man-of-all-work. He did odd jobs, he discussed matters with Roosevelt far into the night—and immediately, with all this work, his health improved. It was in those evenings that Hopkins and Roosevelt together began to discuss and think about the preliminaries that eventually led to the Lease-Lend Act. But before that, Hopkins was suddenly named as Special Envoy to visit Britain—a mission in which, as personal representative of Roosevelt, he met and talked to nearly five hundred men and women of this country, was invited to Buckingham Palace, and attended our War Cabinet meetings. A great deal depended on that mission, for it might easily have fizzled out in the way so many missions do. But Hopkins was the right man for the job, and from his visit a much deeper collaboration resulted.

Incidentally, when he came, he travelled light. He had no hat, no clean shirt. His luggage was the grey suit he wore for his crossing by Clipper. He bought the rest here.

Hopkins is still by no means strong. He has to ration his hours of work, but he manages to pack more than the average man into each hour. His other great attribute which has stood him in good stead is his ability to play a first-class game of poker.

Helping Harry Hopkins is Averell Harriman, Defence Expediter, who has been in London to see that our end of the Lease-Lend organisation is working smoothly. He is one of Roosevelt's "one dollar a year" New Deal friends.

He represents the new school of American finance. He is a millionaire member of the Harriman railway family, but at the same time, he has for long supported Roosevelt's economic experiments—which, to say the least of them, have not always been in favour of the millionaire class.

From his father, Harriman has inherited practical and financial interests in America's railways, and is one of the pioneers of the streamlined trains of which America is so justly proud. He became Vice-President of the Union Pacific Railroad at the incredibly early age of twenty-three, and is now not only a railway executive, but a banker. He is chairman of the directors of Union Pacific, and chairman of the executive committee of Illinois Central, two of the chief railway systems running out of Chicago to the west and the south. He is also associated with Brown Brothers, Harriman and Company, the New York bankers, and is a director of the Western Union Telegraph Company and many other concerns.

He is an old friend of this country. Indeed, one of the first trips he ever made here was as an undergraduate at Yale University. He came to study English oarsmanship, and took back to America the English style of rowing—and won his blue. Behind his polished exterior—American magazines always refer to him as a "socialite," doubtless because he once played polo—Harriman hides a capacity for hard work, combined with sound financial judgment and business ability.

His special job in American defence has mainly been connected with transport—for some time he acted as go-between for the transport systems of America and Roosevelt's committee of business men who advised on questions of national defence. His task in London—and more recently in Moscow—has been to find out how best to send quick aid, particularly Lease-Lend aid.

CHAPTER VII

MEN AROUND ROOSEVELT

ROOSEVELT is the greatest statesman in the world—the one man, more than any other man alive today, who knows how to play Hitler at his own game. We have seen in the last six chapters, the volume of aid that is coming to Britain, and—more than that—the gigantic rearmament programme that is now going on, night and day, in the fighting factories of America.

Behind all those great national enterprises, behind this vast industrial reorganisation, behind this scrapping of old laws so that new ones favour Britain, lies the hand of Roosevelt, guiding America's destiny through this fateful period of its history.

I wish I could give you a long and detailed picture of Roosevelt himself. But I can't. To whip my way through his career in a couple of pages would be stupid—neither would it be fair. But in this chapter, I do aim to tell you something about some of the men around Roosevelt.

No man can guide the ship of state alone. The man at the tiller needs help, expert advice. Who are the men around Roosevelt? Who are the men who help to guide his policies, mould his speeches, shape his anti-Hitler announcements?

There are, of course, so many that a book could be written about them alone. Some you have already read about. But I want to give you an idea of some whose work is far harder than that of the top statesmen who attend functions and make declarations—the men behind the scene—men whom Roosevelt trusts.

The backbone of the United States administration is often in the hands of American university men of great brilliance, whose political careers are whole-hearted. It is *not*, for many of them, merely an epilogue to a successful financial career—though among the New Deal experts can be counted many kings of commerce.

Let us start off with one department which doesn't fit in anywhere else in this book—the State Department.

Roosevelt's Secretary of State is Cordell Hull—about seventy now, and a man who has held his position longer than any other man has ever done. His 'general manager' is a man whose name is also familiar to the British public—the ice-cold Sumner Welles.

Below Sumner Welles, on a par with each other, are four important men—the four Assistant Secretaries of State: Adolf Berle, junior, Breckinridge Long, Dean Acheson and Howland Shaw. These men are playing a great part in America today, working behind the scenes, planning, suggesting—and putting the plums nicely into the laps of Hull or Welles, as all good junior politicians should do.

The American public has probably more confidence in Cordell Hull than in any other statesman in the United States. He is a man who hates the limelight, a tall, silent son of the Tennessee mountains who stands for a great liberal tradition—a man who has never wavered in his passionate belief in free trade. His one great burning crusade in life has been against high tariffs.

He is cautious, a hard worker, though now, at his age, he works with less efficiency than he did in years gone by, and indeed, lack of management in his department has been known to cause delays.

His reserve, his love of study, his quietness is what you might expect, for, after all, he was born and brought up more than forty miles from the nearest railway station. The reticence of country people, and the loneliness of his early life have left marks which will never be erased from his character. In those early days, when he was not chopping down trees and binding them into rafts, he studied. The habit never left him. Perhaps now, he is forgetting it—but five years ago, at any rate, he could still be called the patient student, anxious to learn, even at his age and even with his knowledge.

He is the type of American we see all too rarely in the cinema—the man with a finely cast head, sensitive, calmly distinctive—a man, too, who has been astonishingly correct in some of his world prophecies. In America's amazing boom years, when prices soared and money was there for the asking, he stood alone, a slightly melancholy figure, warning, with his implacable logic, of the shape of things to come. The financial crash proved him right—dead right.

Now Hull backs up the lofty ideals of the President, for he has within himself much of the same park of imagination which fires the idealism of Roosevelt. He is a great friend to Britain.

Welles, at 50, is his complete opposite—not that he has no ideals, but in temperament and efficiency. He is probably the hardest worked man in America's State Department—a man of brilliant organising ability, of speed and precision, who has been thoroughly grounded the world over in diplomacy.

The best-dressed man in the department, with an ice-cold precision and bearing, he understands, more than any other man, what goes on in Roosevelt's mind. He is backed by great wealth, and he and Roosevelt have known each other since they were boys—he attended Roosevelt's wedding in 1907, and himself married an heiress to a railroad fortune.

He has a fantastically high mental ability, is astonishingly exact in his memory—he is always bringing out exact dates, places, times, names, at his Press conferences with American reporters. In a way, though so different, Welles and Hull fit beautifully—Hull is the wise old man of politics, the trusted friend of the public, the man of great ideals. Welles is the brilliant professional diplomat, with a mind as keen as the edge of a razor blade.

He is a great expert on Latin-American politics. Whenever there is trouble in South America, Welles goes off to see what he can do about it. He invariably does the right thing. Like Roosevelt, he went to the famous United States public school of Groton, from there to Harvard, and then into the American Foreign Service.

He is a 'career diplomat'—which in America means that diplomacy is his chosen profession; it is not a reward for good services. He has served, working his way, though always backed by influence, in the American Embassies of Tokio and Buenos Aires, and rose to be head of the Latin-American division of the Foreign Service. Then he retired—until 1932, when he came out of his shell as a strong supporter of Roosevelt.

He has great strength of character, and a firmer way of dealing with a crisis than any other man in the State Department. For instance, when Vargas, the Brazilian premier organised his *coup d'état* in 1937, the American Press condemned Vargas as a fascist. Germany and Italy gleefully lavished praise on him. Welles immediately saw that unless this was stopped immediately, Brazil might become too friendly with the Axis powers—a dangerous business for America. So, to get round the problem, he broadcast a speech attacking the American Press for its attitude to the issue. Brazil came round beautifully, and the American newspapers started attacking Welles. He wasn't worried.

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Now what about the four Assistant Secretaries of State?

Berle is a brilliant man, with a speciality for financial and economic policies. He is a Harvard man—he took his M.A. at 18, and his law degree at 20—and in the last war was in the United States Army. Since then he has been all sorts of things—a successful lawyer, a successful author of books on economics and a successful financier. Always successful. And he is also regarded in the White House as an authority on Latin-American affairs.

But it is his mental capacity that is of such value to the United States government. And though you may not know it, much of Berle's perfect prose appears in some of Roosevelt's loftier speeches and papers.

Berle was one of Roosevelt's original 'brain trusters' in the early days of the New Deal in 1932. And he is one of the few men who get on well with both Hull and Welles.

Breckinridge Long, who was an Assistant Secretary of State in the old days under Wilson, was also, at one time, the United States Ambassador to Rome. He is a full-time politician. He is of great importance, because of his close friendship not only with Hull, but with Roosevelt himself—a friendship which dates back to days long before Roosevelt took office. Long's present job is dealing with administrative problems.

Shaw is an expert on Near Eastern affairs. And it is Shaw who chooses and promotes the younger men in the American political arena. On his judgment and choice depend many of the future administrative men of the United States—and so, on him rests, in an indirect way, much of America's future policy.

He has worked his way up his department methodically, step by step from the day he entered, just 25 years ago, as a £5-a-week clerk. He is still a bachelor.

Dean Acheson is one of those men who gave up a brilliant career for the self-sacrificing role of a behind-the-scenes man in American politics. But he has peeped out from behind the curtain of obscurity once or twice—and I prophesy that he will be one of the leading political figures of the future.

He is one of the most brilliant lawyers ever turned out by Harvard, and a violent anti-Nazi. Almost ten years ago he was recommended as a coming man to Roosevelt, who made him Under-Secretary to the Treasury. But Acheson could not stand

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the financial side of the New Deal programme, and had no hesitation in telling Roosevelt. So in 1933 he went out.

Gradually he was pulled back. He was one of the two men—Ben Cohen was the other—who worked on the delicate legal problem of whether or not Roosevelt had the authority, without going to Congress, to negotiate the famous Destroyer Deal whereby we 'swapped' bases in the Atlantic for fifty American destroyers. He found a way out for that all right. Now, his position is of great importance, for he has the ear of the President, and manages particularly the British end of the White House State Department.

Not content with these four experts, Roosevelt also has four special advisers in the American State Department. Chief of these is Stanley K. Hornbeck, who probably hates the Japanese more than any other man in the world (excepting myself). In the fifties now, a Rhodes Scholar, he is America's leading expert on political and economic affairs in the Far East. And in the last few years, he has certainly been right in insisting that China had the capacity to resist Japanese aggression. He was also one of the first men in America to predict the possibility of a German-Japanese line-up.

His rise had been steady since the days when he was an instructor in Chinese government colleges, and his detailed knowledge has been of immense value to a succession of American governments, particularly when he served as a technical expert to the Far Eastern division of the American Commission to negotiate peace in 1918, and as delegate to the Conference on Far Eastern problems in 1921.

The other three advisers are James Clement Dunn, political adviser on European affairs ; Laurence Duggan, special adviser on Latin-American affairs—at 35, the youngest man ever to hold such rank. And lastly, Herbert Feis, economic adviser—a man Roosevelt remembers gratefully for his help with the financial side of the New Deal in the early thirties.

There you get the real brains of a department very close to Roosevelt. But these, of course, do not constitute the only men who influence the President. Apart from other government experts, what about friends—men like Bullitt, Baruch, Sherwood?

William Bullitt was once Roosevelt's Ambassador to Paris. Now he is out of office—but he probably sees Roosevelt more often than many of the President's government officials.

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A Yale man who went abroad at twenty-three with his mother in 1914, he was in Moscow when the Great War started. Realising that something had to be done about it, this son of Philadelphia society went into the State Department. At twenty-six, he became chief of its Bureau of Central European Information, and from there he went to the Peace Conference.

He quarrelled—quarrelled bitterly—with Wilson, who refused to take any notice of Bullitt's recommendations that Soviet Russia should be recognised. So at the age of twenty-eight, when most diplomats are about to start their careers, Bullitt resigned. He retired, writing to the President that he was going to " lie on the sands and watch the world go to hell."

He didn't. He came back. It took a number of years, but eventually he found just the corner he wanted—Ambassador to Paris, where he succeeded in looking after America's interests brilliantly. Perhaps that is because he has a touch of the French eighteenth-century mind—for the founder of his family was a French Huguenot called Joseph Boulet.

In France he dined and wined in the grand style. One of his garden parties so pleased Chautemps that the ex-premier promptly turned somersaults on the lawn. Bullitt, just as promptly, gave another party.

He has many things in common with Roosevelt, and the two of them have always been firm friends. Both have a similar innate sense that life is more than a dull business to be lived—they treat it as a crusade.

Both of them take their roots from the heart of American history—Bullitt is connected with Pocahontas and George Washington, while his grandfather wrote Philadelphia's present charter. Like Roosevelt, he is a dreamer who is also a man of action—a rare combination that nearly always spells success.

Robert Sherwood, tall, dark-haired American playwright, who wrote *Idiot's Delight* and that magnificent play *The Petrified Forest*, often works with the President on his speeches. If you know Sherwood's style, you can sometimes detect his knack for drama and dramatic effect in Roosevelt's greatest orations.

Like Roosevelt, Bob Sherwood is an idealist and a fervent hater of the Nazi regime. He thinks of himself as half-English—he has a house in Surrey where he likes to spend every summer, and which he calls " home."

Twenty-nine when he wrote his first play, he is thin, long-legged, grave, with grey eyebrows and a thin moustache. He last visited Britain at the end of October 1941—an official visit, when he came over to co-ordinate broadcasting and to endeavour to increase the number of broadcasts between this country and the United States. In the last war, he served in the Black Watch.

Also helping with the President's speeches, is an old and trusted friend—Sam Rosenman, judge of the Supreme Court, "editor-in-chief" more often than not, of the President's "fireside chats."

Then there's Baruch—Bernard Baruch, who probably knows more about organising production for war than any other man alive. And though the man who in the last war mobilised United States industry is now over seventy and is out of office, it doesn't matter. Once a week he and Roosevelt have lunch together in the President's office, and "Barney" tells Roosevelt what's wrong, what's right, with war production. The President always listens.

Tall, striking, Baruch has always been in the heart of American affairs. He is the legendary type of American financier—the mystery man who has a "feel for the market," who has no doubts, is content to act ruthlessly on the spur of the moment, believing absolutely in his destiny. And with all that, he is terrifically energetic, self-confident, optimistic.

Baruch's thesis in the last war was that in war-time there can be no such thing as competition. Competition, he argued, is normally necessary to make demand equal supply. But in war-time, demand exceeds supply in practically every important commodity. There is more business than can be handled. So, as there is no competition, it is up to the Government to control the price. He kept that idea fixed firmly in his mind in the last war, and he cut down all unessentials.

Which brings me to another important man—Leon Henderson, who is carrying on the torch of Baruch. As yet America has no War Industries Board such as that which Baruch ruled in the last war. But at least Roosevelt has found a man to manage one end of it—the *price* of war, and Leon Henderson, Price Controller, is just the man for the job.

He is yet another man who has made his way in the traditional manner. Newspaper delivering started him off, though he showed unusual acumen even in this elementary calling, by

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starting off doubly early on rainy days to deliver the rounds of boys who didn't turn up in the wet.

Then he got a break. He seemed so industrious, so eager to improve, that several citizens of Millville, New Jersey, where the newspapers had been delivered so well and so regularly, clubbed together to send him to college. He fully justified their enthusiasm. Helped by their money, he had a brilliant scholastic record (though, oddly, not in maths) and helped himself through college by fifteen spare-time jobs, also in the approved American way. He then became a teacher, and from it, turned into an economic adviser.

In 1934, he started attacking government financial policies—and attacked them so loudly and so long that General Hugh Johnson growled sourly at him one day in his Washington office: "If you're so darned good, why don't you work here?"

"Okay!" said Henderson and started in. Later he came under the wing of Harry Hopkins, and later still, became an adviser in the Presidential office.

He is abundantly full of spirits—belligerent, untidy, plays a powerful, completely erratic game of golf, and loves big cigars. He never *leaves* home for the office. He *charges* from it. And when, occasionally, he does get a day off, he charges off to his country cottage, gets out his boat, his rubber boots, and goes off boating—and singing. He loves singing.

He also happens to be an adept in soft, sweet talk, and can put on the most serious frown in Washington. It keeps him from being called a saboteur of industry.

One more important friend of Roosevelt: Lowell Mellett, head of the Office of Government Reports—which means very little, if anything. But Mellett uses his office only as a sort of headquarters. A war correspondent and editor, Roosevelt places great reliance on this quiet, good-looking man, who is a frequent visitor to the White House—for private evening chats with the President.

I have heard that Mellett may be behind a suggestion of Roosevelt's to create an American Ministry of Information, with Mellett at the head of it. He should be able to do the job. Son of an Indiana man who published small weekly papers in the Middle West and left his papers to seven sons, Mellett rose to be editor of the Washington *Daily News*, and head of the Scripps-Howard Newspaper Alliance. He plays a large part now in the publicity side of the President's administration.

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BOOK TWO

The Fighting Forces

CHAPTER VIII

AMERICA'S WAR MACHINE

THINK what this war of *ours* means to America. Think of the cost and effort needed in *America* to repair the Baldwinistic follies of *Britain*.

As a direct result of our war, America has decided on great defence measures. She wants for herself an army of at least two million men, including nine armoured divisions ; she aims to have as soon as possible an air armada of at least fifty thousand planes. As well as that, she has started building the greatest naval force in the history of the world—a two-ocean navy which she insists must be strong enough to thrash any two other nations, excepting Britain.

Now this in itself is a great programme—particularly for a country still not officially at war. But consider. It is by no means the end of the effort. On top of all this, America has a merchant shipbuilding programme that runs into millions of tons. Towering above all this, there is the gigantic Lease-Lend programme of aid for Britain. On the islands that ring America's Atlantic seaboard, time, effort, money is being spent on naval and air bases that stretch in a chain of defence from Newfoundland to Trinidad. Put them all together and you get some rough idea of the programme both for us and herself, which faces America today.

If you translate all this effort into terms of hard cash, the resulting constellation of figures is positively bewildering. The President's latest request—made towards the end of October—for another £1,496,250,000 Lease-Lend money for Britain, brings America's expenditure on the war to a figure which is

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twice as high as in the last war—and that cost the United States about £8,000,000,000. The new Lease-Lend programme will bring this war's costs up to a total of £16,548,750,000, if passed in its present form. Perhaps you get a better idea of what this figure means in this way: to raise that figure in England, every man, woman and child would each have to contribute more than three hundred pounds.

Since the beginning of the national defence programme for United States rearmament, the American treasury has paid out something like £2,296,750,000 for American defence alone. In the same period—since June 1940, that is—Congress has authorised in expenditure and loans about £14,134,000,000—and this figure does not include contracts placed in the United States by Britain before the Lease-Lend Act, nor does it include the new appropriation. If they are included, the total war programme of the United States can be summed up like this:

Army	£6,151,750,000
Navy	£4,244,500,000
Lease-Lend . . .	£3,246,250,000
Other defence organisations	£1,987,750,000
British orders . . .	£ 918,500,000

But all these figure by themselves, impressive though they may sound, must be translated into terms of efficient soldiers and ships and planes and guns and tanks. And more than that. To see how America stands today, *now*, we must see how many of those soldiers and ships and planes and guns and tanks *are ready*.

America has never been defeated in a war. True she has not fought in many major campaigns, for like her neighbour across the water, Great Britain, she has never paid much attention to war unless she has been forced into it—either by defence or ideological reasons. The world today consists of only two broad divisions—those who want and like war; those who don't want it and don't like it. We and America belong to the latter.

We have seen in the first part of this book how America has settled down in earnest to the job of undeclared war—of aiding and abetting Britain in every single plan of production, of even helping to patrol the sea lanes from Nazi raiders and long-range aeroplanes. So far, so good. The one war machine which,

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when geared up, Germany can never beat—the American machine of production—is beginning to turn smoothly. It will still take some time before everything comes off the mass production belts in such overwhelming quantity that Germany can be decisively crushed. But in the meantime, anything may happen.

Supposing America takes one step more—the logical step following the events which have led to her passive aggression (an understatement, but you know what I mean) in present world events. Supposing one way or another, through pressure, through anger, through friendship, America goes to war. What happens then? How is she placed? Machines are useful, yes—but without the trained men to run them, without the men to pilot the aeroplanes, to fire the guns, to ride the tanks, to sail the ships, the war could never even start.

Please note, I am not saying I think America *will* come into the war, nor, if she did, that it would necessarily be war against Germany. The initial enemy might just as well be Japan, with its greed military hierarchy ready and waiting to stab their way through somebody's back into the war as soon as something is there for the cheap taking. Have no illusions about the Japs. I know them. They will move directly the moment is ripe, for as jackals they rank even lower than the Italians, which is pretty low.

Because of this, America might easily have to enter the war against Japan. Her fleet may easily be called upon to protect America's vital interests in that sphere of interest—how vital that sphere of interest is we shall see when we come to discuss naval strategy. Then, of course, anything would happen. We should certainly all be in it together.

So—in whatever direction, east or west—how is America prepared for total war, as opposed to her present undeclared war?

We must take into account a number of factors—the strength of the army, the navy and the air forces, which in America are not one separate force, but two units which come under the command of either an army general or a naval admiral. In the next three chapters, we shall deal separately with these forces, but first we must get some sort of an idea of the construction of America's war machine, from the President downward.

The President, of course, is the chief of all the armed forces and a chief who thoroughly understands the tactics of all the services, and is no mere bystander to say "Yes" to everything his generals or admirals advise. But the machinery of a modern war goes deeper than that. You can't just put the President at the top, with two arrows pointing out towards the army and navy, and then a string of subsidiary officers underneath.

That is all right for analysing one body of America's war machine—say, the construction of the army—but the entire machine is more complex. There are so many asides, each so important, yet so divorced from its neighbour that it is difficult to explain.

I think this is the best way to do it. Right at the top is the President—the first man in the land. Immediately beneath him, on a level footing, he has the following departments:

Department of the Navy, headed by Frank Knox.

War Department, headed by Henry L. Stimson.

The Council of National Defence, which is composed of the War Secretary, Navy Secretary, Secretary of the Interior, Secretary of Agriculture, Secretary of Commerce, Secretary of Labour, and the President himself.

Department of the Treasury.

The Maritime Commission.

The Office of Production Management.

The State Department.

This, more or less, forms the key to America's defence. Here you have the big men in big jobs who are within easy reach of the President's telephones, who can be relied upon to give him, whenever he wants it, accurate and expert details of their own side of the war machine.

There are other departments, of course. But if you get together the heads of the navy, army, production, finance, shipping, food, you are getting together the men who really count. All these departments, and the thousands of departments below, work through the President's Executive Office, a giant department with a personnel of seven thousand, under the direction of a man of only thirty-seven—Wayne Coy, who acts as liason officer between the President and the heads of the departments.

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Below this 'top table' you get other distinguished 'guests'—you get departments like the Munitions Board, Price Administration, Export Control, Civilian Defence, Scientific Research, Priorities Board, and so on. But obviously these do not, whenever they get some fresh news, report it direct to the President.

If, for instance, there is any trouble about priorities, Edward Stettinus, who runs the department, reports to his chief, Knudsen, of the Office of Production Management, who in turn holds conferences with the President or makes his own decisions. Washington is a large family—particularly since the urgent defence activities began—but it has, if you can get to it, a simple sort of system behind it whereby everybody reports to the man above him and so, through each department, matters get sifted and sifted until only the bare essentials of the war effort reach the ears of the President. Of course it is bad luck on some unknown man who has invented a death ray that really *does* work; but on the other hand, it saves the President an enormous amount of unnecessary detailed trouble.

A lot of these bodies have already been dealt with—O.P.M. under Knudsen, the Department of Agriculture under Wickard—but as we come now to the fighting forces of America, we are concerned more with the Department of the Navy and the War Department, and the heads of these two departments, Knox and Stimson, are the subjects of pen portraits at the end of this chapter.

Firstly, what is the one vital question, apart from production, that affects all the three fighting forces, yet cannot be dealt with under separate heads? It is the question of manpower.

The red-letter day for America's manpower problem was October 16, 1940. On that day, the democracy of America, in which all men are created free and equal, was put to one of its greatest tests. Between the hours of seven in the morning and nine o'clock at night, fourteen and a half million men did what they were told to do—did it quietly, without fuss, without annoyance. They registered for conscription.

To us, so near a war for so long, that may not seem very important. We had conscription before the war. But America has always been farther away from the battlefield. America in 1940 was certainly not near to war. Conscription meant the burying of an old and treasured American tradition—that the

United States, in peace time, would never call upon her men to take up arms. Never in peace before had America been conscripted.

But President Roosevelt, seeing the way things were going, brought the matter before Congress, and in mid-September 1940 the Burke-Wadsworth Bill for national conscription was passed so that, in the words of the Bill "in a free society the obligations and privileges of military training and service should be shared generally in accordance with a fair and just system of selective compulsory service."

By October, registration had become a fact—registration for all men of all the forty-eight states between the ages of twenty-one and thirty-six—nearly fifteen million of them.

They will not all go into training, of course. They registered only. The Conscription Act called for eight hundred thousand men for the Army (at present the Navy has as many volunteers as it needs) to take a year's course—which has since been extended by law so that conscripts may have to serve another eighteen months on top of their first twelve.

Here you have a great manpower potential pool. You do not get quick results from conscription in peace time—not in America and Britain anyway—but the men who have been through the mill of conscription are always there to return as partly-trained soldiers. Out of the fifteen million who registered, only about a third could ever be called to arms, and that would probably take until 1945 if America stayed at peace. But on the other hand, those men are now registered, and ready on call. They are there, placed and docketed if America goes to war. The first stage of complete war-time mobilisation has been completed—without the war.

You need never worry about the manpower of a country like America, even though a great percentage of the population must necessarily be retained for industrial purposes. The amount of manpower, and the speed with which it can be raised, is always a little difficult to determine, because it depends not on the men themselves, but on such problems as accommodation for troops, equipment and so on. We can, however, go back to see what happened in the last war.

America actually declared war on April 5, 1917. By May 18, the first sweeping conscription act called on all men between

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twenty-one and thirty to register. In a few weeks that register yielded ten and a half million names. When she declared war, America had an army of little more than a hundred thousand men, yet in a few weeks men were pouring across the Atlantic.

Many of the men who went to France at first, didn't bother to wait for steel helmets or puttees or regulation outfits. The forty-eight States going to war had no time to waste. And they went to war on a terrific scale which even Germany has never equalled in such a short space of time. By October 1917 the Army's strength had risen from about a hundred thousand to one and three-quarter millions, and at the time of the armistice, less than a year later, America had nearly four million men under arms.

For months they went over to France at the rate of quarter of a million men a month. Brest was turned into an American port instead of a German one. Whole divisions were landed at British ports—and never has manpower been harnessed so quickly and efficiently as it was then.

No, I do not think we need worry about manpower potential, though it must never be forgotten that *trained* manpower is not there yet. Far from it. And there you have the first step that America must take—she must see, *now*, that all her fighting forces are ready for battle.

She is doing that, of course. She is building up the equipment and the training facilities for the army that *must* be created within a few weeks of a possible declaration of war. It is not easy. It is more tempting to send materials to Britain, hoping that we can stave off defeat with these materials, for at present America is not manufacturing enough arms to supply us with *all* we need to cover our own defects and at the same time supply her own present forces, let alone build up great caches of arms for future warriors.

But somehow, it must be done. The training must be done, too, so that the men are welded into one homogeneous mass of trained power. In the last war, *a quarter* of the first million and a half men examined for the United States forces were illiterate—an incredibly high proportion. Now, the average conscript in America has finished his third year of high school. Even so, America is taking no chances—for she realises that modern war needs not only better machines, but better brains to use those

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machines. In sixteen large training camps for members of the forces, teachers help America's men of war to improve their general knowledge—and that includes writing, reading, arithmetic. Officers get specialised courses of varying types. As an instance, the Air Corps alone has two hundred and fifty people teaching Spanish to commissioned men—more for use in South America than as a threat to that pint-sized little dictator Franco, I suppose, but you never know. . . .

America indeed is taking the utmost precautions to see that in every way, the men of each service are better equipped than they were a year ago—both in brains, machinery, in physique. Of course, America has immense advantages that we have not got. She has space, she has climate, she has transport. America is so big that a bunch of soldiers can go out on manœuvres and completely lose themselves if they are not careful. Salisbury Plain is a fleabite to some of the great acres open for training in America. Men can practise long-range flying that has always been denied to Britain—until we were sensible enough to train on the leaflet raids. All manœuvres in America can be done on a scale always denied to us. They can choose their weathers, their types of country, they can practise tropical warfare or train for arctic warfare, on flat plains, on mountain, in desert—just as they please.

Fortunately, America has taken advantage of this opportunity. She has now, in motion, in action, a war machine ruled by a man who is a brilliant statesman and leader (not always the same thing). She has the nucleus of a great conscripted force, she has a vast naval building programme. She is, in a word, prepared. Not as well as she would like to be, but she is at least alive to the dangers of world war.

Still, what could she do—*now*? How could she marshal her present forces if suddenly she decided to go to war? After all, a war of defence would mean little change, because she is already waging a war of defence. She has dispatched forces to Iceland to defend herself. She has erected bases in the Panama Canal zone to defend herself. She has imposed restrictions on raw materials to defend herself.

Even now she is planning to send, over the top of the world, supplies to Russia throughout the winter—all to defend herself. From the West coast of the United States, around Alaska and through the Bering Straits and the Arctic Ocean north of Siberia, they will go over the Russian northern sea route to the port of Archangel—all to defend America.

To my mind, if America entered the war *now* on the side of Great Britain, the two greatest benefits we should receive immediately would be (1) increased production—for that would leap up at once, when America drastically curtailed her spending power by ceasing to make luxury goods, and (2) even more help in the Battle of the Atlantic where great help is already being given. America would almost certainly have to send an expeditionary force somewhere—and quickly, too, for one reason. If she is going to train a great army as she did in the last war, she must have the accommodation and facilities. To get those she will want to get rid of every trained man.

So now let us have a look at these forces—see how powerful they are at present, and see, too, the strength they aim to achieve by the middle of 1942—the "deadline" of America's plans to equip her own forces.

MEN BEHIND THE SCENES

Colonel Frank Knox, United States Navy Secretary, is not a colonel at all. He is a major. He rose from private to major in the last war and ever since, for some obscure reason which nobody can fathom, has been called colonel.

Son of a man who was an oyster canner—an unsuccessful oyster canner—he seems to have done everything in the conventional American unconventional way. Now sixty-seven, he started in the approved fashion by delivering newspapers at Grand Rapids when he was eleven. Seventeen years later, still in the approved fashion, he owned a newspaper instead of selling it.

In between there was an adventurous period that has moulded his whole life and character. When he was twenty-four he was a red-headed soldier with the Rough Riders in Cuba—that gallant band with high ideals of American honour and patriotism. A bullet once carried away his hat—to say nothing of part of his hair. Knox has never forgotten that segment of his life—he lives now with the colonel of the Rough Riders as his ideal in life.

When the last war reached America, he refused to be the

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American equivalent of a Whitehall Warrior. Though he could easily, at his age, have stayed out of the war, he enlisted as a private, saw service in France, and emerged as a major.

In all his private, newspaper, political career, he has always branded everything either black or white. He never blends the two. He never steers a middle course.

That is what makes him so strong today—as it made him strong when Hearst was paying him £250 a week to run his newspapers, before Knox became owner of the influential *Chicago Daily News*.

He has done more clearing up and polishing in the American Navy than any other man—and has done it knowing that he always has the ear of the President, who is a close friend. Now, after a little more than twelve months, he knows every admiral by his nickname, knows what they all do with their public and private lives, and how well they can do their jobs.

His first great reform was 'streamlining' two divisions of the American Marines—which meant greater efficiency with a reduction of manpower, by the addition of mechanical strength in the form of tanks and other arms. That is what he called his "real left jab" for the fleet.

He decided in 1940 that he ought to see in action the Navy he controlled, so he set off for Hawaii in a naval bomber. He did eleven thousand miles in sixteen days instead of the two months the same journey would have taken by ship. He boarded every type of naval vessel round Hawaii, changing from one to the other at sea, and finally, as a sort of Knoxian climax, took off from an aircraft carrier in a plane to see what it was like.

His attitude towards civil service bottlenecks might well be a lesson to this country. In the Navy Department, he spotted immediately that delays were being caused not only outside, but in his own department, where office work was still being performed at a leisurely place, to say the least of it.

He started out with a staff of three thousand eight hundred clerks. Now he has six thousand—and even with that cumbersome staff, ten times the efficiency he started with. He is, after all, a business man. You can see that in the first standing order he gave to every worker in his department—" You are ordered not to leave the office at night until your desk is clear." And he stayed until the last desk *was* clear.

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This was his first step in speeding the building of ships—his most vital, most urgent job. He set his own house in order first, then looked around for other faults. When he took over, shipyards were working a five-day forty-hour week. Now they are working a six-day forty-eight-hour week, with three shifts to the day instead of one.

Sixty-seven now, Knox looks ten years younger—and acts ten years younger too. Ruddy-complexioned, vigorous, he works and eats like a horse. For thirty years he has done exercises every morning before his breakfast—and he never misses. For quarter of an hour he goes through a regular programme in his pyjamas, winding up with four minutes of trotting gently round and round his room.

He has a standing offer to any of his assistants—young or old, male or female—of a suit of clothes if they can keep up his exercises for three months without a single day's break. In thirty years, he has only paid out twice.

Stimson—Henry Lewis Stimson, United States Secretary for War—is a very different sort of man. Oddly enough, whereas Knox has no right to the title of colonel, Stimson is a colonel who prefers to be called plain " Mr." He is the man Roosevelt chose to lead his experiment in coalition government by appointing him Secretary for War in 1940—a job he had previously held thirty years ago.

His age is against him—he is seventy-three and has been known to doze off during important conferences unless prodded gently by a tactful junior. But at the same time he has brought wisdom and clever political statesmanship to the American scene.

He is, in fact, America's " elder statesman "—and tragically, he has more than any other American played a part in naval limitation and general disarmament ; and now has returned to office, ironically enough, at the menace of German aggression.

Born in 1867 in New York to a family descended from ultra-respectable Pilgrim Fathers, he was educated at Andover, Yale and Harvard—the English equivalent is Harrow, and both Oxford *and* Cambridge—and became a lawyer. As soon as Roosevelt came to power, Stimson was a thorn in his side. He disliked the New Deal and nearly everything connected with it, and was not afraid to say so distinctly and regularly, for he is a forthright, straight-from-the-shoulder sort of man in an impressively quiet way. He has no bluff, no tricks, no clever guile, no bluster.

He first became Secretary for War in 1911 under Taft, but went out of office when Woodrow Wilson became President. When America entered the last war, he was about fifty. He promptly joined up as an artilleryman, and ended up by commanding an artillery unit in France.

In 1927 he was sent by Coolidge to make peace between warring parties in Nicaragua and was so successful that, as a reward, he was made Governor-General of the Philippines, America's important colony. He has, therefore, some practical experience of Far East problems that should be useful in these times. He also knows England well—it was in England that he played a leading role in the London conference on the limitation of armaments. He is the exact antithesis to Knox—and not, I am afraid, anything like so colourful and important a personality in present-day affairs.

America's Director of Conscription is a civilian—a civilian six feet three inches tall, called Clarence Addison Dykstra, president of the University of Wisconsin. He has proved to be an excellent choice. A political scientist, he has a great gift of administration and organisation. He showed that in his early days when, as city manager, he cleaned up Cincinnati. When great floods almost wrecked the city, the local government surrendered all its powers to Dykstra who became virtual dictator until order was restored. At present he has got indefinite leave of absence from the University of Wisconsin.

CHAPTER IX

SEA POWER

America, like Britain, is a maritime nation. Her strength depends on her sea power—and the way she uses that power in time of war. Unlike a continental nation, war for her is not a simple question of sending an army over her frontiers to attack another country separated only by a boundary drawn by men on a map.

America knows this, which is why, now, the United States is concentrating, above all other defence needs, on building a navy that will be the greatest in the history of the world.

She knows she may have to fight a naval war—and it will not be a one-ocean war ; it will not be a two-ocean war. To be safe—to be *absolutely* safe, America needs a three-ocean navy—three navies ready and able to fight. In the North Atlantic, in the Pacific and—most dangerous of all—in the South Atlantic ; where across a comparatively small stretch of water, an enemy in Dakar may attack South America, or even the Panama Canal—that strip of water which in America's hands means a link by which her separate fleets can be brought together in a reasonably short space of time.

How strong is this United States navy ? How many ships are there to hold the seas if America should go to war ? We will leave out of our calculations the gigantic naval building programme which was given in Chapter III., for I am concerned more with the navy which may have to fight today, rather than the navy which may have to fight tomorrow. America's great naval building programme is not a bulwark for the present ; it is an insurance policy for the future.

The latest accurate figures I can give you of America's naval strength are those issued at the outbreak of war. Many vessels have been built since then—many more are coming off the stocks each month. But here, in tabulated form is the strength

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of the United States Navy as it was at the beginning of the war, compared with the strength, then, of other powers :

	U.S.A.	Japan	Italy	Germany
Battleships . .	17[1]	9	6	8 (including two old)
Heavy cruisers . .	17	17 (including five old)	7	3
Light cruisers .	15	18	14	6
Aircraft carriers .	5	5	?	—
Destroyers . .	160 (about)	121	87	33
Submarines. .	87	58	104	?

Now let us examine the latest types of ships which America possesses.

Her £14,000,000 battleships of the 35,000-ton class have a cruising range of fifteen thousand miles and a crew of fifteen hundred men. Their maximum speed is 27 knots. Their main battery is nine 16-inch guns, each firing a shell of almost exactly a ton. They also have about twenty 5-inch guns—some suitable for anti-aircraft work—together with a number of smaller anti-aircraft guns.

Aircraft carriers which cost £6,000,000 each and have a cruising range of five thousand miles, are twenty-thousand-ton vessels and have a complement of two thousand men. Their main armament consists of eight 5-inch anti-aircraft guns, together with smaller A-A guns. They have space for about eighty planes, and a speed of about 34 knots ; the lack of fire-power means that they have to be ready to run—quickly.

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[1] The U.S. battleship figure includes two known to have been completed since the outbreak of war.

The Italian and German figures do not include ships lost since the war started.

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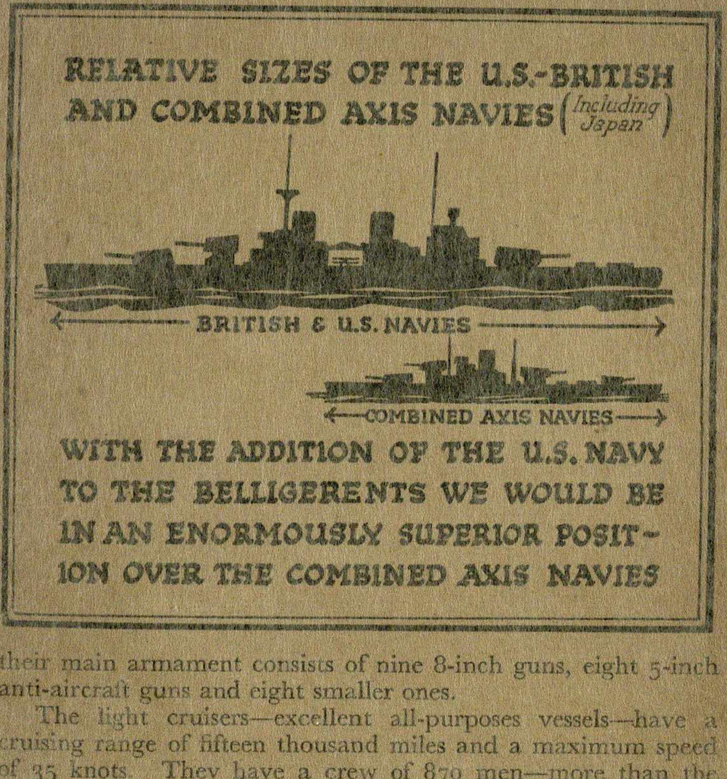
The most noticeable point about America's heavy 10,000-ton cruisers is their remarkable cruising range—eighteen thousand miles. They have a maximum speed of 32 knots, and a complement of 700 men, they cost just over four million pounds, and their main armament consists of nine 8-inch guns, eight 5-inch anti-aircraft guns and eight smaller ones.



RELATIVE SIZES OF THE U.S.-BRITISH AND COMBINED AXIS NAVIES (*Including Japan*)

WITH THE ADDITION OF THE U.S. NAVY TO THE BELLIGERENTS WE WOULD BE IN AN ENORMOUSLY SUPERIOR POSITION OVER THE COMBINED AXIS NAVIES

The light cruisers—excellent all-purposes vessels—have a cruising range of fifteen thousand miles and a maximum speed of 35 knots. They have a crew of 870 men—more than the heavy cruisers—and their main armament consists of fifteen 6-inch guns, together with the same number of smaller guns as the heavy cruiser possesses.

The latest American destroyers have a maximum speed of 39 knots, a displacement of roughly 1600 tons and a cruising range of six thousand miles. They have 5-inch guns, together

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with smaller ones, and also carry depth charges and about a dozen torpedo tubes.

Now, what are the first points you notice about these figures? They are *cruising radius, fire-power and speed.*

The United States Navy has longer cruising radii than any of her potential enemies, much greater fire-power, but slower speeds—all done deliberately.

Why? Because this navy—and the navy of the future—has always been built up on the assumption that it will have to fight far from home.

The ships of no two navies in the world are alike, for they are always built to the design of the country; and the most striking feature of any sea warfare that might confront America is not the *power* of any possible opponent—the problem is one of *distance.* America knows full well that her near neighbours will never attack her. Any enemy which chooses to fight America must come from across the Pacific, or across the Atlantic.

Knowing this, America's strategy in the event of war, is to extend her boundaries by sea to within a couple of hundred miles of the enemy's coastline—*and not an inch nearer America.* Which is the direct reason for the three points of cruising radius, speed, fire-power.

The reason for the cruising range is obvious—American ships have long journeys to make from their main bases. The fire-power has been stressed throughout all naval construction, simply because American ships must be strong enough to take the initiative far from home.

The comparatively slow speeds of American vessels are the direct result of this strategy of distant fighting. The average speed of the American fleet is 20 knots, while that of the British is 26 knots, and the German fleet can steam at an average of 28½ knots—all because America has sacrificed *speed* for *armour.*

Wherever a British warship fights, there is—just round the corner, so to speak—a base into which she can slip if she is damaged. But how different for America. She has armoured her vessels far more than any other nation, simply because, if an American vessel is hit, it may have to go great distances under its own steam before it can find a friendly haven with facilities for repairing it. Therefore, America has taken precautions against receiving direct hits. She has done her best

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to make sure that if there are any hits, they will not be fatal.

American battleships have a belt armour more than fourteen inches thick, compared with Japanese armour of about eleven inches. Their light cruisers have five inches of armour on the water line and five inches on their turrets. But this armour, plus the fuel needs for long voyages, naturally meant certain sacrifices.

It was either speed or fire-power. So speed went. When the Germans, on the other hand, realised the need for heavy armour, they sacrificed guns and the weight of ammunition for speed. Now their biggest ships mount only eight 15-inch guns against nine 16-inch guns of America's North Carolinas. In other words, the German ship throws about sixteen thousand pounds of metal per broadside, while the American ship pours out nearly twenty-one thousand pounds.

But despite these advantages, the American navy is not strong enough, numerically, to fight a three-ocean war. All her navy in one part would represent a great strength—but that is an impossible ideal, for it is vital to the future of America that she should keep great forces in the Pacific—we shall see why, later on.

I think the most significant point of America's navy—and potential navy—is the stress laid on the air arm. The number of America's navy planes must remain a secret, but at least it can be stated that America is alive to the fact that no warships in the world are armoured as well as hers are, and are therefore more susceptible to aerial attack both with heavy calibre bombs and torpedoes.

And the naval air arm of the United States is well able to deal out hammer blows. Its "pursuit ships" are fast and manœuvrable, but it also has a number of bombers which can operate from aircraft carriers.

American "seagoing landing fields" have been built on a grand scale—fast, excellent vessels, with only destroyers and light cruisers having greater speeds. They are lightly armoured—the only ships in the American navy that have sacrificed armour for speed—and rely for protection on other warships and their own speed.

The Americans have perfected a theoretical strategy of

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naval battle which includes vital participation by the aircraft carrier, stationed well behind the main line of battle, though her planes would naturally be well in advance—the fighters knocking out enemy fighters, then the bombers attacking enemy vessels.

But now, let us analyse the three oceans in which the American navy may be called upon to fight—the North Atlantic, the Pacific, the South Atlantic.

The North Atlantic first—that present battlefield on which the men of the British navy are fighting for every one of our lives. Here, as in other spheres, the two great navies of the world, manned by the English-speaking peoples may some day have to share a common task. Indeed, that task is being shared now by our naval units and the American non-belligerent warships which so kindly warn us of any unpleasant surprises they have seen in the grey rolling waters of this maritime graveyard.

But what if America goes to war? Firstly, would it be possible for any power to launch a direct naval attack upon her across the North Atlantic? The answer is, no—definitely no. The North Atlantic Ocean itself is too wide and dangerous to be crossed by any naval expeditionary force in the world, unless that force were accompanied by auxiliary ships—store ships, tankers, repair ships and so on. Then, apart from our interference, American aeroplanes would be able to dive bomb approaching vessels almost as they pleased. The armada would never reach the shores of the New World.

If not, then what can the American fleet on a war-time basis do in the North Atlantic? The answer is surely: doing the same job as she is doing now—keeping the sea lanes open. At this moment, a sort of unofficial convoying is being carried on by the United States navy. It is seeing that goods ordered by its favourite customers are duly delivered. It is protecting its sea lanes to outposts in Greenland and Iceland. It is patrolling vast stretches of water which it insists must remain free and open.

How are American naval units fixed for this sort of work? How do they work out against German U-boats and aeroplanes and the bigger enemy raiders, such as the one which sank the *Jervis Bay*?

The main essential of a ship doing convoy work, excepting in the broad strip of the Middle Atlantic, is a battery of light weapons that can go into action rapidly—these must be mainly anti-aircraft guns. The ships do not need to be powerfully armed, as submarines wisely show no inclination to fight, their job being to nip in, sink a ship or two, then run away. They do not need sustained speed, because the convoy rate is slow; they do not need torpedo tubes, because it is extremely difficult to torpedo a submarine.

If they *have* these things, then they are *wasted for the work*, for the whole essence of naval shipbuilding is to compress the most value per ton into the vessel. We have seen how armour means loss of speed or fire-power. Torpedo tubes which are useless are taking up space and weight better employed by carrying depth charges. Heavy guns take up space and weight that could be used for anti-aircraft guns, or small anti-submarine guns.

That is the sort of ideal ship you need for protection when the convoy sails out, or the convoy is coming home—where U-boats and planes lurk. In Mid-Atlantic, out of the quick reach of battle fleets, the big raider harries shipping. There, protection must be stronger.

But the first type of convoy work—which type of America's shipping is best suited to the job?

On the whole, of course, the ship of the Corvette type, which I am glad to say America is building—and building quickly. Only two-thirds the size of a destroyer, and less than half a destroyer's speed, they can be built in a sixth of the time it takes to build a destroyer, and for a twelfth of the price. Think of the fuel you save compared with a destroyer. Think of the men who can be spared for other duties. Think of the smaller financial and industrial sacrifice if one is sunk.

The number which America is building is a close secret, but these ocean mongrels have a fire-power per square yard of deck surface greater than any other similar ship afloat—the principal armament is a 4-inch quick-firing gun, heavy enough to deal with any submarine which Germany can turn out.

They are practically 'unbreakable'—apart from sinking (which happens very rarely) it is difficult for them to have a breakdown at sea following a brush with the enemy for every piece of machinery is duplicated. Everything has been sacrificed for speed and armament. About half the crew of sixty

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is always on duty, so a "Box and Cox" arrangement saves sleeping space, while food, after a comparatively long voyage, is always "hard tack"—storage facilities are so small that little variety of fresh food can be carried. The luxury of the ship is the canteen—where you can get the usual cigarettes, chocolate and sweets—all stored in a room about the size of a bathroom.

For the deeper regions of the Mid-Atlantic, the United States wants more ships like the grand light cruisers of the Omaha class—well armoured, well manned, with excellent fire-power for their size. These are probably the finest ships of their kind afloat. But America has only about ten of them—not nearly enough. Still, you must remember that U-boats constitute the gravest danger to merchant shipping—not heavy raiders. And U-boats have only a limited range, and prefer to wait for their prey comparatively close to land.

If America were ever to be involved in naval warfare in the North Atlantic, she would not need a battle fleet there. We could always look after that end. What we lack are convoy escorts. And America cannot help us to a great extent, though she could perhaps spare a few destroyers.

On the other hand, don't forget that America has only about 160 old destroyers—and for modern naval warfare, you need at least six destroyers per battleship—that is an absolute minimum, and must be in addition to those which may be away on special jobs such as convoy work. Since America has seventeen battleships, she needs well over a hundred destroyers to stay with her battle fleet. Taking into account those that are in dock, being repaired, it does not leave many.

Now we come to the Pacific battle zone. Here America's hands are tied up with the need for watching the Far East—*and with the need for keeping a fleet stationed there.* America could doubtless frighten Japan with a great Pacific Fleet based on the American coastline—a fleet ready and able to move out and give battle, if Japanese warships approached the shores of America. But Japan would do nothing of the sort. She would approach instead America's vital spheres of interest nearer Japan—the Philippines, Guam, Honolulu, even Alaska. And that is important to America both from a defensive and offensive point of view.

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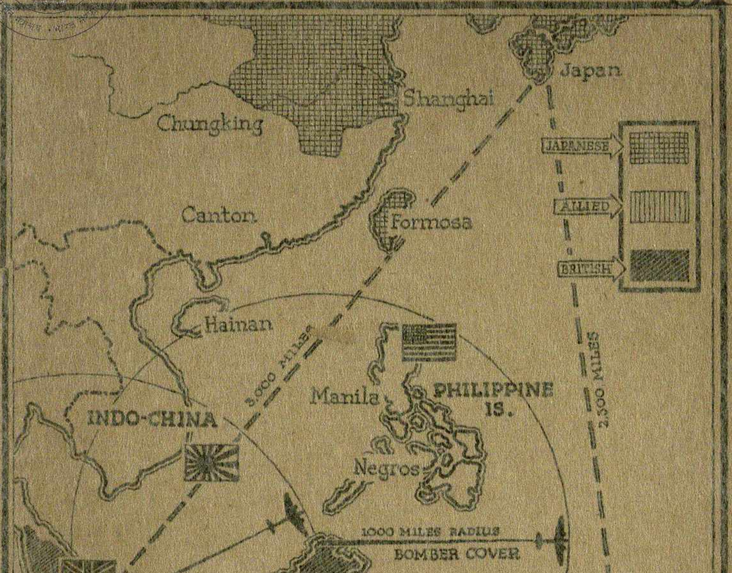

How Singapore could help America

From the defence point of view, it means that America might be robbed of rubber—one of the major essentials of modern production. So vital, so important is this, that the bombing of

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Singapore or the Dutch East Indies would have a far more serious effect upon America than the bombing of London. An invasion of the Dutch East Indies would be far more dangerous to the economic life of America than an invasion of Britain. But the same thing applies to Japan. She *must* move in this region first, because she needs the goods too—which is the *offensive* reason for America's Far Eastern Fleet. America's command of the seaways of this troublous district means that Japan can be completely cut off from her vital war materials. By maintaining a large fleet in the Far East, America not only safeguards her own interests but is in a position to cut off Japan's sources of supply immediately, if that nation should ever go to war.

The men who want to control the Orient would be subjected to a state of blockade infinitely more stringent than that which we have ever inflicted on Germany. Germany, after all, is a wealthy country in many respects. She may be short of some articles of war, but she has always had great reserves of others. The seventy-four million people of Japan live in a desperately poor country, and if she went to war with America, only China would be open to her—for Japan is five thousand miles from the Canadian and American coasts, three thousand miles from the great naval fortress of Singapore, more than four thousand miles from Sydney in the south.

So you see how necessary it is for America to maintain a fleet in the Far East. Japan's first probable war move would take the form of a gigantic attempt to cut through the stranglehold of her very lifeline. Most certainly she would not attack America—she would probably go straight for Singapore after a preliminary attack on Hong-Kong. The Philippines would also be attacked, and so would Guam, that important outpost which the Americans, alas, have so consistently refused to fortify.

Would America's islands in the Pacific help her? Yes, they would.

Guam is one of the key points. It is a little island thirty miles long, seven miles wide, five thousand miles from the coast of California—America's stepping-stone between the great naval base at Honolulu and the Philippines—a Daniel in the yellow lions' den. It is vital when you imagine the difficulties

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that confront a navy with no bases near at hand. Imagine, for instance, what the Battle of Jutland would have been like if the British fleet had owned no base nearer than New York.

For years America's Navy Department has begged, cajoled, implored the government to fortify Guam. For years the government refused, despite the fact that a fortified Guam would have been worth at least three capital ships in the American navy, and would have cost less than the price of one. At last the island is being fortified to maintain an air force and submarine bases.

America is lucky—very lucky indeed—in that she has enough islands to slice in half the great Pacific Ocean that separates Japan from the United States. From Alaska, stretching towards Soviet Russia, she owns the spinal column of the Aleutian Islands. America has at least three strong positions there. Due south is Hawaii—three thousand miles away, the cross-roads of the Pacific. The Philippines themselves have twenty-one big harbours, and Manila Bay, with a circumference of 120 miles, is probably the finest harbour in the Far East. Remember too that America has many islands which she has used in the past for flying bases—such as the Canton and Enderbury Islands or Howland Island, nineteen hundred miles south-west of Honolulu, which was surveyed in 1935 when the Hawaii–New Zealand air route was first mooted. All these are useful, provided always one doesn't overestimate their value. I do think that in this region the superior capital ships of the American Navy, together with *our* fleet, *plus our bases*, will always mean a naval defeat for Japan. But at the same time, it must never be forgotten that America must keep a fleet there—and at the present time, America has only got a one-ocean navy.

Now lastly, the South Atlantic battle zone—to my mind, in many ways one of the most potentially dangerous naval battlefields of the world.

What would happen if the Germans got hold of French warships, operated from Dakar, and decided to attack, say Brazil? Well, one thing is certain. The American Navy could never get there in time to intercept the enemy units. She has no bases near enough.

One of America's most urgent needs is a fortified base, *and quickly*, in the Recife area of Brazil—that part of the New

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World which is closest to Africa. Or better still, a share in our base at Freetown, Sierra Leone. I don't know if the Germans ever could get to Brazil. But if they did—even if they were driven out later—they might do a great deal to cut off from America the source of some of her raw materials—manganese, tin and other products which the American nation needs. An economic war on the United States, via South America, would be very serious indeed.

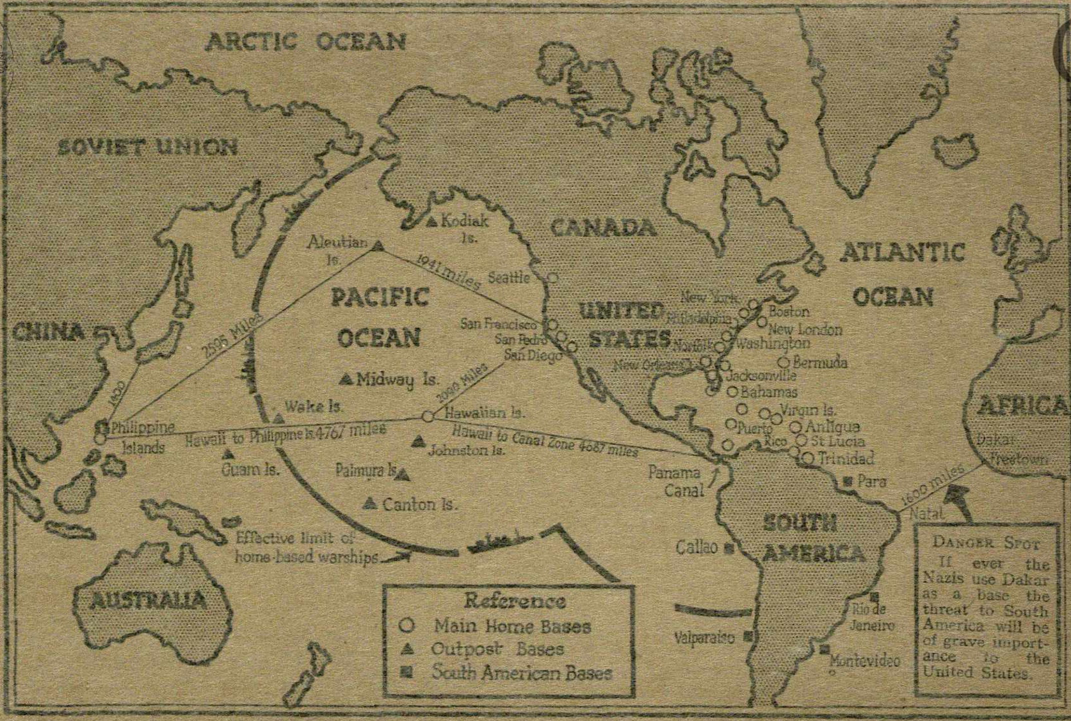
What about the bases which America received under the "destroyer deal"? Would they not help? Bases are the third great element of sea power—the first two being ships and men. But these bases which form such an imposing ring round the entire United States Atlantic seaboard are really better discussed under air power; for after all, America did not gain naval bases in the "destroyer deal"—she only gained *the right to make naval bases*. As yet, they are not made. A naval base—to be worthy of the name—must have defences against sea and air attack, with shore batteries strong enough to keep the enemy at a respectably distant perimeter.

A pleasant, sheltered cove, where a warship can rest, is not a naval base. The best way to look at the naval bases in the Atlantic is to realise their great value to America's naval air force. This branch of America's fighting forces can use them almost at *once*—and that is their chief value. As strong naval bases they will not be ready for some time.

The bases are of far more immediate value in protecting the Achilles heel of United States naval defence—the Panama Canal. America is the only great power whose mainland faces both of the world's greatest oceans. And the Panama is the only way in which America can quickly shift its fleet from ocean to ocean.

The canal in other hands would mean the isolation of all or part of America's fleet in one ocean; it would prevent the sending of reinforcements from one ocean to another.

It is safe from the Pacific side—not for hundreds of miles are there sites for possible bases. But on the Atlantic, the Panama is ringed with possible landing fields, potential dangers of air attacks to put the canal out of action. The long semicircle of the West Indies was an obvious danger zone. Now, with the addition of the bases leased by Britain, the defence of



DANGER SPOT

If ever the Nazis use Dakar as a base the threat to South America will be of grave importance to the United States.

AMERICA'S LONG-DISTANCE NAVAL STRATEGY

the Panama is assured. The defence is one of the air, but it must be included in this chapter, because it is, after all, a matter of supreme importance to the United States Navy. It is now impossible for any enemy power to secure an advanced outpost on the eastern side of the canal from where a bombing attack could be made to cut the canal.

For remember, America *needs* a three-ocean navy. She won't have a real two-ocean navy for another four years. Until that time she has to shuttle her ships from one ocean to another.

MEN BEHIND THE SCENES

The United States Naval Commander-in-Chief is Admiral Harold Raynsford Stark—" Betty " Stark to the American fleet —a naval " youngster " of sixty who had been a Rear-Admiral only two years when Roosevelt announced in March 1939 that he was to be supreme commander of United States naval operations. Liked by Knox, a first-rate sailor, Stark was appointed only after most careful thought—for obviously, his actions as head of the fleet might easily be the means of sending America to war.

Stark won the Distinguished Service Medal for his work in hunting down enemy submarines in the last war and will doubtless be responsible for hunting down some in this war. He has served in the navy as Chief of Ordnance and as commander of cruisers of the American Battle Force.

Under him, in charge of America's main Pacific Fleet, is Admiral Husband Kimmel ; in charge of the Asiatic Fleet is Admiral Thomas Hart.

But the man who comes closest to us—literally—is the Commander-in-Chief of the Atlantic Fleet—Admiral Ernest Joseph King, a great man and a great sailor—and incidentally, a qualified airman.

Bald, aged sixty-two, King has had a brilliant career, starting from the moment when he graduated from America's Naval Academy in 1911, and the Academy wrote of him " Temper ? Don't fool with nitro-glycerine ! "

That temper of his has landed him in trouble before now. On the other hand, he can be charming, and has been known to dance better and longer than any young naval officer at

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night—and work far harder than his junior the next day.

In the last war he won the Navy Cross for his staff service in the Atlantic. He won the Distinguished Service Medal for his work in salvaging the American submarine S 51, which was lost with thirty-five lives in 1925; and two years later he had a gold star added to his D.S.M. for salvage work when another submarine went down. He was made a captain at the comparatively early age of forty-four, and at forty-nine qualified as a naval aviator. So he has served under, on and above the sea.

Here are a few more names which might leap into the news if America's Atlantic Fleet goes into action.

Next to King in the Atlantic comes Rear-Admiral David Breton, who commands the Atlantic battleships. He is one of the navy's greatest tacticians, fifty-six, grey-haired, a fine seaman. Next to him comes Rear-Admiral Arthur Cook who at fifty-nine commands shore-based naval aircraft having, like his chief, switched to air duty after more than twenty years at sea.

Rear-Admiral Reichmuth commands Atlantic destroyers—he is as even and easy to get on with as his chief is hot-tempered.

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CHAPTER X

LAND POWER

Are the armies of the United States ready for the call to action? Could America, at a moment's notice, put into the field a strong force of men, properly trained, properly equipped, knowing all there is to know about the thousand and one facets of modern warfare? Could America, in fact, meet a major power in land warfare, if suddenly called upon to do so?

The answer is no. One of the odd facts about modern rearmament programmes is that the army is always the last branch of the forces to be considered (except in Germany). A country at peace rarely has a full-strength army waiting for war. It keeps in being a select and vigorous and well-trained spearhead of highly efficient soldiers, and, then, as soon as the guns begin to boom and the machine guns start to stutter death, it immediately waters these down with untrained men, on the assumption that a half-trained man is better than none at all—an assumption by no means always correct.

Numerically, and in experience too, the United States army is only in course of evolution. It is fast developing a hitting power, but that development is by no means complete. Let us first have a look at the numerical strength.

Figures for August 1941 show that the army had by then reached a strength of 1,506,500 officers and men—more than double the strength at the end of January 1941. The total is made up of about a hundred thousand officers and half a million regular army soldiers, together with nearly three hundred thousand in the National Guard (the equivalent of our Territorials) and just under seven hundred thousand trainees—conscripts. In addition to these, there are about sixty-three thousand men on the reserve officers' list.

The recent increase in numerical strength is thus very large, and an actual army of a million and a half is by no means to be despised. But it does only represent a fraction of the great

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army America could build up if she went to war and was fully mobilised. But apart from the potential figure, is the present force capable of going into the fight against a well-seasoned army, say either the Germans or the Japanese, who have both had their baptism of blood?

In modern warfare, experience—if you are lucky enough to survive it—is the greatest teacher of all. The regular soldiers of the United States army certainly form a well-trained and well-equipped backbone. Many of them have seen service either in Cuba, in Hawaii or in the vital Panama Defence zone.

But as for the rest—they are largely untrained with no experience, and in many cases without that overwhelming weight of equipment that is so absolutely essential in wars like the one we are fighting. Please do not think I underestimate the worth of these men—one has only to realise the grand work done by our own Territorials to realise how absurd any such complete criticism would be—but there can be no question that scientific training, and experience, makes all the difference in the world—often the difference between victory and retreat. The same can be said of equipment, and it must be remembered that the United States army has willingly sacrificed a great deal of its equipment—particularly tanks—for the benefit of Great Britain and the Empire.

By the middle of 1942 the position will be very different, if only because the conscripts—or draftees, as they call them in America—will by then have been thoroughly trained. And one cannot insist too much that in modern warfare, the man with the tank or the gun needs almost as much skilful and detailed training as the man with aeroplane.

All three branches of war—on the seas, on land and in the air—are now purely scientific. No longer do two men fight either with their fists or with two pieces of cold steel and five bullets apiece. No longer does an army advance from trench to trench by means of sorties and flares at night and guerilla tactics. They may help, true, but the wars of today are won by the men who run the machines—more than that, by the men who know how to run their machines better than the other man.

As yet—and this may well be stated bluntly at the outset—America's army lacks that experience. It is learning rapidly, and since the average American is essentially a mechanical creature, he will probably learn far more rapidly than his European colleagues—indeed, the first lesson has already been learned thoroughly: the complete and predominant need for mechanisation, and terrific hitting power by weight of metal. We shall see how well that has been put into operation in a page or so. But at the same time, if America ever thinks of going to war, any delay between the end of 1941 and the middle of 1942 will make all the difference in the strength and skill of her land forces.

At present, the American army is composed mainly of the following divisions:

27 infantry divisions
4 armoured divisions (not all fully equipped)
2½ cavalry divisions
5 special H.Q. Tank divisions

plus the army air force (dealt with separately) and parachute troops, which we shall discuss later in this chapter.

So far, we have mentioned the weak points in the United States army—but at the same time, it must be remembered that these are nothing like as weak as those of the British land forces at the start of this war. So do not think that I am dooming these soldiers from the outset. Against desperate odds, we managed to survive. America could certainly fight a terrific war—but I am really looking at the problem from the point of view of decisive victory, which can only be achieved by overwhelming superiority in all branches of the forces.

Now, let us look at the bright side. Let us analyse some of the most spectacular sections of America's army, remembering that every day which passes means one day nearer to the time when the average will be as good as the best.

Because America always does everything she undertakes in such a big way, I place great hopes on her newly-created armoured divisions. Out of four such divisions, two are now fully equipped—each one being stronger than its German counterpart, the Panzer division.

An American armoured division consists of 488 officers and 9443 men, 287 light tanks, 128 medium tanks, and 1328 other vehicles, including trucks and motor cycles. It contains within

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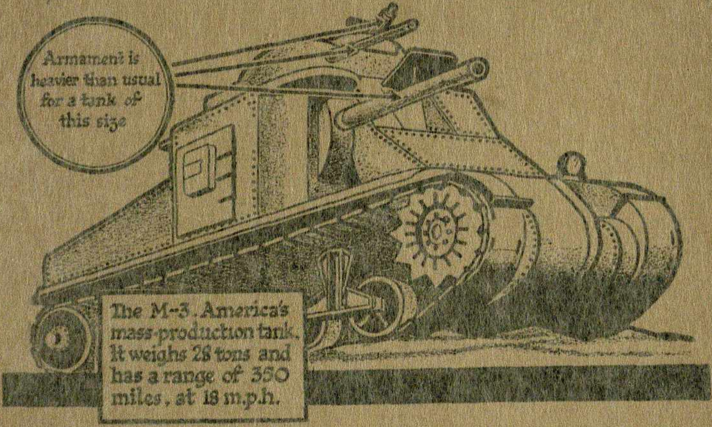
itself: infantry, engineers, reconnaisance troops on scout cars, mobile artillery, air observation squadrons—all co-ordinated into one single unit possessing amazing speed and terrific hitting power, welded together by orders flashed to every section through the five hundred radio sets which also form part of its normal equipment.

Of course this very speed and mechanisation brings in its wake incredible organisational problems. For instance, it takes



Armament is heavier than usual for a tank of this size

The M-3. America's mass-production tank. It weighs 28 tons and has a range of 350 miles, at 18 m.p.h.

114,000 gallons of petrol to move one armoured division 150 miles—say from Doncaster to London. And the division can travel forward at a speed of anything up to twenty-five miles an hour—compared with the average two and a half miles an hour of the old-style infantry on the march. Imagine, too, the problem of food supplies and cooking for the ten thousand men who make up this surging, mechanised mass. Imagine the treatment of wounded soldiers, of supplies in general, of a hundred and one things.

Fortunately, America is just the country to make these difficulties vanish overnight, for she—and she alone—is capable of organising even better than the Germans.

So far, America possesses only two of these rapier divisions capable of going into action. The mechanisation of the other

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two divisions is not yet complete, though it should be in a fairly short time. America has built up its armoured divisions entirely on one principle. Despite the great weight of metal—for the tanks and guns of one division could together hurl at least five hundred tons of metal at the enemy—in spite of this weight, the division is *not to be used as a great bludgeoning force of attack.*

Learning from Germany, America's answer to the blitzkrieg will be to seek out the weakest link in the enemy's chain of defence or attack and then, as one solid unit, hurl an armoured division through that one weak link forgetting everything else. Its job is to penetrate and disorganise.

Firstly, the fast armoured scout cars and observation planes find and report on such things as tank traps and land mines and anti-tank guns. Then comes the thunderous roll of the tanks, followed by the self-contained infantry in their trucks, and the units of field artillery. The tanks charge, the infantry mop up, and once through the enemy line, the armoured force swirls out like a fan, smashing reserve units, disrupting and disorganising supply lines, cutting communications as quickly as it can.

Every single soldier in these American armoured divisions undergoes the most rigorous and thorough training. The average man in an American tank has to pass a medical test almost as stiff as that required of a pilot. Once in the armoured division, it takes a year to train him. It takes a hundred hours of actual practice for him to learn to drive a tank well enough to be able to take ditches and trees and turn and swerve in the minimum of space.

So you see, training the personnel of an American armoured division cannot be done in a short time. The chief of the armoured force insists absolutely on the severest training imaginable for every single man in every division. He sees that they get it.

At the same time, I do believe there are certain points of criticism, particularly about the artillery sections of each division. It seems to me incredible that the guns should still be hauled by trucks in the old-fashioned way—that is, with their muzzles pointing backwards, so that the gun must be turned before it is ready to be fired at the enemy (unless one happens to be retreating, which is not the function of the armoured force). The German armoured division, on the

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other hand, has its artillery mounted on self-propelled caterpillar tractors, with muzzles pointing at the enemy and ready to go into action immediately. The Americans have to dismount and manœuvre their gun round so that it faces the way it has been going.

The actual guns are not so good as the German guns. Many of the American ones are still equipped with old-fashioned sights, and the American anti-tank gun needs two men to deal with it, whereas the German anti-tank gunner both aims and fires.

Still, the main point is that the Americans *have* got the right, broad idea—the idea of creating great self-contained units of tremendous hitting power. And many more of them are to come. By June 1942, the United States army will have seven armoured divisions—a total of seventy thousand highly trained men, with nearly three thousand tanks, four thousand armoured cars and carriers, and nine thousand other vehicles of various types—all this quite apart from tank divisions and mechanised infantry.

What now of the infantry—that mass manpower force of any modern war machine? I cannot give you precise details of all the divisions of the American army, but it might be interesting to have a look at one of the infantry divisions which has now been fully motorised—it is, of course, America's aim to motorise eventually most divisions in the same way.

This particular division of which I have details is composed of a mixture of regulars who have seen service abroad, new regular troops, and more than five thousand of America's new conscripts. Here America has again realised the value of hitting power with metal. Actually, this division has had its manpower cut by 1500 and now consists of fourteen thousand men; yet despite this, its fire-power has increased enormously.

It now has 465 machine guns instead of 282, 66 cannon instead of 48, 26 armoured scout cars instead of the old number of 16. It has *an extra* 52 light tanks and *an extra* 54 medium tanks to forge ahead of the actual infantrymen, who ride to battle in caterpillar troop carriers.

This new-style infantry division promises well, but as yet there are very few divisions equipped in the same lavish style. Even so, the general equipment of all infantry divisions is quite good. As a basis, each man has the world-famous Garand rifle, which is a semi-automatic shoulder rifle, capable of firing twenty-five rounds a minute. It is worth at least five of the ordinary type of rifle, and in the summer of 1941 it was stated that the entire army would be equipped with this gun by the end of the year.

As soon as possible, all members of the army who carry pistols are to be equipped with a new semi-automatic carbine. Pistols, after all, have only a limited range of about fifty yards, which means that they are purely a defence weapon. This new carbine, which has already been issued to some men, will have an offensive range of about three hundred yards. All infantry officers and non-commissioned men who normally carry pistols will in future be supplied with carbines. Armoured corps, engineers, parachute troops and other branches of the services will also receive them at the ratio of about a thousand to each regiment—a very high proportion.

In the details of the composition of the army, I mentioned cavalry divisions. It seems a long time since our blimps told us how the gallant cavalry of Poland would be able to stem the German advance or, later, how the daring Cossacks, born and bred in the saddle, would be able to outwit panzer divisions trying to force their way into Russian territory.

Horses in this war have been hopeless. Why then do cavalry divisions exist in America, of all countries—the one country you would expect to be capable of discarding any outworn methods of war?

Actually, an American cavalry division of twelve thousand men has supporting units of fighting machines—vehicles like armoured cars, trailers to carry horses if necessary, and even a few light tanks. The reason for cavalry is quite simple—America doesn't know where she is going to fight, when she is going to fight, or how.

If the American army ever went into action in a country with wide roads and easy communications, I don't suppose the cavalry would even be remembered. But it is just possible—as you may remember from the chapter on naval warfare—that America *may* one day have to fight in South America; even, perhaps, in Mexico. If that happens, the United States cavalry divisions may well prove their worth. In any event, the American army is taking no chances.

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You must remember that the cavalryman no longer fights *from* his horse. There will never be another unsuccessful charge like the Charge of the Light Brigade. The cavalryman's horse is merely his vehicle for transporting him from one place to another—from behind the lines to the battle arena, perhaps. And there are some places where armoured cars cannot go. Horses are at their best among hills, rocks, forests. There, supported by its own artillery, and with no superior air force to turn the balance against it, a cavalry division might easily beat a large mechanised force.

The modern cavalry division of the American army has four horse regiments, which are each composed of a headquarters troop, a machine-gun troop, six rifle troops, and a troop with special weapons. It also has a troop of anti-tank guns and mortars. Altogether the horses and vehicles can pull or carry an astonishing arsenal—five hundred sub-machine guns, a thousand machine guns, sixty-seven anti-tank guns, twenty-eight mortars, twenty-four howitzers, 4600 semi-automatic rifles, more than ten thousand pistols—plus, of course, the men themselves.

Indeed, the whole toughness of the cavalry unit in America lies in its combination of horse and vehicle. It is a small part of the American army as a whole, but it is highly trained and mobile.

And now we come to the newest and most exciting branch of the army—the parachute troops. In the summer of 1940, America had forty-eight parachute troops. By the summer of 1941, that tiny figure had risen to eight battalions—4084 fully-trained men, together with another four hundred in the Marine Corps. In another year, that figure will be several thousands stronger.

The Americans are paying astonishing attention to the training and creation of a tough parachute force that will be able to storm and take enemy outposts wherever they may prove dangerous. Parachute troops receive the highest training of any men in the army. Only volunteers are taken, and each man must be unmarried and between 21 and 32, and have a high intelligence quotient. The best indication I can give you of the thoroughness of their training is by pointing out that in the summer of 1941 one battalion of parachute men *in training*

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only suffered one death, seven leg fractures, four ankle fractures, one broken ribs, and about fifty serious sprains of various types.

The American parachutist first of all learns how to jump off a twelve-foot platform without getting hurt. He must be able to guide his falling parachute from right to left, and long after he has made his first jump, he is still in the throes of study—map reading, radio operating, elementary engineering—gaining enough knowledge, anyway, to enable him to find a bridge, blow it up and radio his headquarters all about it.

In actual jumping, the men fall from about seven hundred and fifty feet. The human body falling from that height takes about eight and a half seconds to reach the ground. As the parachutist jumps, he counts slowly. If by the time he reaches four his regular parachute has failed to open, he pulls the rip cord on the emergency parachute which he has strapped to his chest. This should open in two seconds. So the margin between life and death is sometimes two and a half seconds.

So much for the various units, but how is the American army as a whole training? How is it getting on with the job of compressing into the smallest possible time the maximum amount of military knowledge? The terrific expansion of the United States army has brought many problems in its wake—instructors, housing, tents, equipment, food; in fact, organisation. Unless the most careful collaborated plan is followed, absolute chaos can result.

America of course has got space and labour to deal with all these problems. Dotted all over the country are great forts or army camps which are now jammed with conscripts who must form the backbone of America's new army. Let us take a typical new one—Fort Bragg. Only a year ago it consisted of the bare headquarters buildings and an airfield. Now it is one of the largest army camps in America. It is also—quite incidentally—the third largest city in North Carolina. *The camp alone.*

It has a total area of *192 square miles,* and has a training personnel of seven thousand men. When the soil was first turned to enlarge and improve it on September 20, 1940, the officers and men lived in less than four hundred buildings, many of them extremely small. Now those buildings number 3135. At a cost of six million pounds, new roads, sewers, places

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of entertainment like theatres, recreation halls, hospitals, have all been completed.

Working with a crew of twenty-three thousand men, construction engineers completed the buildings at the rate of one every thirty-two minutes of every work-day week.

If you went there, you would see row after row of barracks, each holding sixty-three men. No wooden stuff, thrown together quickly to accommodate a large mass of men. Each one is scientifically planned, with a hot air heating plant, while doors, windows, stairs, beds, are in exactly the same place in each one. Built from a standard design, twenty thousand of these barracks have been built all over the United States—probably the greatest mass production housing experiment that has ever taken place.

This building has been vitally necessary as conscripts began to swell America's army. To accommodate one division of nineteen thousand officers and men, the army needs more than three hundred of these buildings, plus a hundred and twenty mess halls, a hundred and thirty store houses, twenty-four officers' barracks, twelve officers' messes, fifteen administration buildings, nine recreation buildings, two theatres, and at least one hospital of seven hundred beds.

An indication, that, of a side of army expansion that is not always remembered—the necessity of housing large numbers of men comfortably, cheaply and conveniently.

We cannot, of course, discuss where or when the American army is likely to fight, if it ever has to fight at all. The purpose of this book is to show, objectively, the strength of America, not to suggest a line of action that America should take. But it might be interesting to outline, very briefly, the machinery that would have to be set in motion if America did decide to send an expeditionary force overseas.

General Marshall, supreme chief of the army, would first of all hold a conference with Mr Roosevelt and Mr Stimson, the United States Secretary for War. Once agreed upon a course of action, Marshall would summon the head of the Intelligence branch and the head of the War Plans department.

These two men would lay before Marshall all the facts he wanted to know about the country to which the expedition was to be sent. They would be helped by some of the experts mentioned in the chapter "Men around Roosevelt," and would be in a position to give complete details ; a blue-print of the destination of the force.

Then the head of Operations comes on the scene to decide with his chief on the method of attack to be used—whether the armoured force should be employed, or the cavalry, and the question of air strength necessary to complement the force. After that the Administration steps into the picture, to plan all co-ordination and supply details—in other words, this department would be responsible for all arrangements to see that the men actually got there in fighting trim.

Then, before the final order to march or embark, Marshall would have last-minute discussions with his three deputy chiefs of staff.

All the plans are ready. All of them. The United States army is growing from strength to strength. At present it may be suffering from growing pains, and the race for equipment has still to be won, though I think the end of this is drawing near.

MEN BEHIND THE SCENES

The Commander-in-Chief of the United States army, General George Marshall, is sixty. He was appointed to his present position about two years ago over the heads of twenty major-generals and fourteen brigadiers—always a healthy sign. He is only the second leader in the whole history of America's army who has not been to West Point, the Sandhurst of America, so grossly misrepresented by the American cinema industry. Marshall entered the army as a second lieutenant—and worked his way up.

He holds his position for four years—unless he makes mistakes. He won't. He comes from the professional school of soldiering—a brilliant organiser and tactician, an earnest student of theoretical as well as practical warfare, who knows everything there is to know about the army of his own country, and a great deal about the armies and methods of the others.

His most successful military operations were naturally in the last war, where he had more than one opportunity to show the Germans a few facts about the American army. In France he was responsible for some remarkable feats. He it was who

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brilliantly handled the preliminaries for the great Meuse–Argonne offensive of September 1918. He was in the thick of the fight in France and actually, in September 1917, at Bethelément, saw the first three American soldiers killed in the war.

Marshall also helped in the great French attack in May 1918. His organising ability was of the greatest value when the American First Army helped to attack the St Mihiel salient. Marshall had in his hands the immediate transfer, in the midst of battle, of half a million troops and nearly three thousand guns—a fantastically difficult feat. He did it. He did it easily and got his men into position for one of the biggest offensives of the war.

Now, this man, who also served in the Philippines, is moulding America's army of the future. In his spare moments (not many) he likes to ride, shoot and fish. Sometimes, he goes down to "Roosevelt's river"—the Potomac—alone, with a packet of sandwiches and a hired rowing boat.

What I think was the most significant thing about Marshall's appointment as head of the army was that not one of the senior generals who were passed over said a word against him. In America that is praise indeed, for people are more outspoken than here. Indeed, almost all of them said he was the best choice that could have possibly been made. That is tribute.

Now, who are the men who form Marshall's "brains trust"? He has three Deputy Chiefs of Staff. Firstly, Major-General William Bryden who, like the other two, is a West Point graduate. He has a great gift for organisation. General Henry A. Arnold is known in Britain. He was recently a special observer in this country, sent by Marshall to study our methods. The third Deputy Chief of Staff is General Richard Moore, who graduated at West Point in 1903. Ever since then he has been an officer in the American Engineers.

Marshall has also, immediately under him, five specialised departments. Here are the men who lead them. In charge of WAR PLANS is Brigadier L. P. Gerow, who in the last war was in charge of aircraft armament abroad. ADMINISTRATION is under Brigadier-General Wade Haislip, a colleague of Marshall's at St Mihiel and in the Meuse–Argonne offensive. General

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Sherman Miles is in charge of INTELLIGENCE, and General Harry Twaddle is in charge of OPERATIONS AND TRAINING. SUPPLY is in the hands of General Raymond Wheeler, a Bachelor of Civil Engineering.

These are the top men. As well, there are the heads of the Four American Armies stationed in the United States. The First Army, which has its headquarters at New York, is commanded by Lt.-Gen. Hugh Drum. Remember his name. If ever America sends an expeditionary force abroad, Drum is the man most likely to lead it. He has seen more active service (and he has more medals) than any other leading soldier in America. He is a colourful, vivid personality—a fine soldier in every respect.

The Second Army, which has its headquarters at Memphis, is commanded by Lt.-Gen. Ben Lear, one-time sergeant in the Spanish–American War. Lear is reputed to be such a great lover of animals that when his favourite horse died, he had the hide cured and hung on one of the walls of his home. All the same, the last news I received from America about him was more reminiscent of his days as a sergeant. Lear was playing golf on the Memphis course when some of his troops rolled by. Not recognising him, they cheerfully bawled at him, " Hey you ! Want a caddy ? " and also made soldierly jibes at girls playing in shorts on the course. Lear promptly made them march fifteen miles under a hot sun, then ride 135 miles.

Lt.-Gen. Walter Krueger commands the Third Army, which has its headquarters in San Antonio. Krueger was born in Germany, but went to America when he was only eight. He fought against the Germans in the last war, and has also seen service in the Philippines and in Cuba. He has worked his way up to his present position from private.

Lastly, the commander of the Fourth Army, based at San Francisco, is Lt.-Gen. John L. DeWitt, a graduate of Princeton, who joined the American army as a second lieutenant in the Spanish–American war. DeWitt is not only a fine soldier of the field, he is one of the army's outstanding executive men.

CHAPTER XI

AIR POWER

The United States of America has no separate air force in the same sense as Britain has the R.A.F. It has no mass of aeroplanes which can be used under only an air command to strike at the heart of an enemy. Instead it has two separate forces—the Army Air Corps and the Navy Air Force—together with the Coastguard and Marine Forces, which are part of the bigger groups.

At the present time there is some discussion in America as to the advisability of scrapping the existing command construction whereby there is no one *airman* who can say: "We will bomb such and such a place tonight," without referring it, in theory anyway, to a soldier or a sailor.

America has obviously studied very carefully the lessons of the air war between Britain and Germany, from which it appears quite obvious that an entirely separate air force is on the whole the better plan—provided always that the army and the navy receive intelligent co-operation from the air arm.

This we have in Britain—particularly in the navy, where our Fleet Air Arm is distinctly better than its German counterpart, though not as good as the United States Naval Air Force. This is no slight on our service—America's Naval Air Force forms a big percentage of her entire machinery for aerial warfare, and as such is naturally on a much bigger scale than our Fleet Air Arm.

It must not be forgotten that America, too, is bounded on both sides by great oceans, and the distances are so great that all American defence issues are inevitably tied up with long-range sea power.

Indeed, here is an odd fact: if Germany, for instance, were to be so rash as to declare war on America, America could for a time fight the war—and fight the war very well indeed—*without a single soldier in uniform.* In any event, she would *have*

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to repel any invasion of her own country with sea and air power alone. This of course does not mean that America could win a war without soldiers, for the machinery of land warfare is an essential to victory. But it does give a reason for America's great stress on naval air power.

Whether any change will be made—whether America's Air Force of the future is likely to become a separate entity like the R.A.F., or the Luftwaffe—is difficult to say. Many people in America today favour a complete remodelling of at least the Army Air Corps, so that that half of America's air power anyway will be completely self-contained, while the Navy Air Force will carry on as before, though perhaps on a smaller scale.

Critics of the existing regime naturally point to the Battle of Britain as an example of what an independent air force can do, but the main argument in America at the moment is not so much whether the idea is good or bad—strategists will always differ and hold their own opinions on this point—but whether at the moment the change is wise ; whether, in fact, such a major operation could be performed when the United States may be so very close to war.

I have no doubt that the opinions of those who want a distinctive and separate air force have been greatly strengthened since the reports and personal observation of the R.A.F.'s Bomber and Fighter Commands at work have been made available to high American authorities. They have been able to study at first hand—often as observers in this country—just how an air force, complete in itself, works in a major war.

I myself cannot help thinking that one great independent air force in America would be a great boon—particularly if America was fighting in the war with Britain as her ally. I say this because America's whole air strategy is based on a long-range offensive—in other words, in pushing out and extending her frontiers across the seas before any invader can reach her coasts.

Britain, on the other hand, has had for some time to build up a great defensive weapon, though she is of course concentrating more now on offensive tactics. However, *our* defensive air force, plus America's long-range bombing air force would weld into the greatest air force of all times.

That is if America has got the planes. Has she—or are her air forces still in a state of optimistic hope ?

Well, let us look first at the totals aimed for by hopeful executives. The deadline date for building up both air forces is July 1942. By that time, the Army Air Corps hopes to have about nineteen thousand planes, while the navy will have about seven thousand. (By that time, too, it is hoped that Britain will have been supplied with a total of fifteen thousand planes.)

These are not all planes for actual fighting. They include trainers, transport planes, observation planes and so on, and I doubt whether the figure will be realised by the middle of 1942—a great deal depends on the needs of Britain, and now, of Russia. I fancy myself that if, by the middle of 1942, both the army and navy together have 25,000 planes, they will have done very well. And that would be no mean air force, particularly when you consider the air losses Germany has sustained in Russia.

Now let us take a glance at the Army Air Corps, which aims to have nineteen thousand planes. What has she got now—what force could she put into the air if she were suddenly faced with war to-day? We will have to use only the figures which we are entitled to publish.

On June 30, 1940, the Air Corps consisted of 3300 regular and reserve officers, nineteen hundred flying cadets and about forty-six thousand enlisted men. By January 1941 that force had expanded to just over six thousand officers, seven thousand cadets and eighty-three thousand men. At that time it was anticipated that by the end of June 1941 there would be ten thousand officers, fifteen thousand cadets, and 151,000 men.

Here, briefly, is how the Army Air Corps is constructed—we must study this first, before we can see where these pilots will fight, and how many planes they have got.

The Army Air Corps is sub-divided into two more or less watertight compartments—the training and general maintenance side, and the actual combat side. The fighting unit is called the General Headquarters Air Force, and is directly responsible to the Commander-in-Chief of the United States army.

It consists of all the actual fighting (not fighter) planes of the Air Corps, and has been built up entirely as a great panzer division of the air—nothing enters its calculations except the ability to deal out hammer blows. It is the fighting unit. The rest of the Air Corps does not affect it, except to provide it with

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all the men and planes it needs, and do its reconnaissance and observation work.

America is divided into four great air districts, with headquarters at Long Island, Tampa in Florida, Spokane at Washington, and Riverside in California. Each district has its separate command and staff, all of them being under the general headquarters staff at Washington.

The army's planes are grouped in wings—which are just about as elastic as the British wings, and can consist of anything from fifty to two hundred planes, according to the locality and needs. There are three, four or five wings to each district, each wing being split up into groups, which are then sub-divided into squadrons.

Altogether, there are seventeen wings, and fifty-four fighting *groups*, of which thirty-nine are in the G.H.Q. Air Force—the rest are in defence bases outside America, such as Panama or Hawaii

A wing in the air force is similar, really, to a brigade in the army. Its very elasticity makes it impossible to give any accurate indication of its numerical aeroplane strength, but it usually has about four groups—perhaps a bomber, fighter, reconnaissance and an air base group.

Each group corresponds roughly to a regiment—and it, again, can have anything from twenty-five to eighty planes. Even the American squadron is not standardised—some of the squadrons of big bombers have only six planes; some of the squadrons of small fighters have as many as twenty-five.

One thing stands out immediately from this analysis. In war, results depend on the G.H.Q. Air Force, whose commanding officer, Lt.-General Delos Emmons, is answerable only to the G.H.Q. of the entire American army. Thus, in theory, General Marshall, supreme chief of the American army, is the only man who can give him orders.

The projected increase in personnel of the G.H.Q. Air Force is from 51,000 to 182,000, and its first big job is to get the planes for this. Out of the nineteen thousand planes ordered for the Army Air Corps, nearly thirteen thousand will be for actual operations—the rest will be reserve planes to stop gaps as they arise. Out of the thirteen thousand, about eight thousand will be planes that actually fight—the others will be trainers, observation planes, reconnaissance planes, and so on.

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And most of those eight thousand are going straight to the G.H.Q. force, which when it reaches its full strength by the middle of 1942, will have about 2700 heavy bombers, of which about a thousand will be Flying Fortresses. Actually, almost half of the eight thousand planes will be bombers of one type or another; the other four thousand being fighter planes of various kinds.

So you see the balance of army air power in America—the great stress on bombers and still more bombers to make sure that, in the event of war, the seas round America will be kept free for America, and that no enemy will ever be able to cross them.

Many of the planes listed above have been delivered—the exact percentage is a secret—and this rapid expansion has created two more urgent problems: landing fields and pilots.

To solve the first problem, America's civil aviation network has stepped right into the picture. When the drive for expansion began in 1940, the Army Air Corps had only seventeen permanent bases for its squadrons. Immediately, full details of every civil flying establishment and aerodromes were thoroughly investigated, so that likely airfields could be weeded out. By the spring of 1941, the army had nineteen permanent bases, plus twenty-three air stations ready for occupation. As well as this another hundred good landing fields had been selected, and were being improved by engineers so that they were capable of taking heavy bombers in all weathers.

What about pilots? The one thing which the American army refuses to mass produce in this mass production world is its pilots. But at the same time it has been urgently necessary to increase the personnel, and entirely new methods have been needed to ensure an even, ever-increasing flow of young men.

Here, briefly, is the training of the young American in search of his wings. Firstly, he goes to a reception centre where for four weeks he is "trimmed"—he gets fitted for uniform, is taught elementary drilling and service procedure and so on. Then he goes to an elementary flying school for six weeks—usually a civilian flying school. From there the would-be pilot goes to receive his first flight instruction—a thorough ten weeks of it at one of the Air Corps-operated flying schools. By this time, the man is nearing his commission, but he still has to put in another ten weeks at an advanced training school.

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By this speeding up, it has now been found possible to produce a pilot for the Air Corps in a little over six months instead of the twelve months which it took previously.

The three commands under which training is grouped—Randolph Field in the Gulf of Mexico area, Moffet Field in the California area, and Maxwell Field in the South-eastern area—are also area commands for the training of bombardiers and navigators, and for photographers, engineers and observers.

In 1939, the average number of new pilots turned out for the Air Corps was round about two thousand a year. By 1942, this will have been stepped up to twelve thousand a year. At present the army air force has set one goal and one only in front of it—twenty thousand pilots by the end of 1942, with trained air crews to be turned out in proportionate numbers—it was hoped that throughout the whole of 1941, an average of two hundred radio operators a week would be turned out, while more than three thousand navigators would be trained in the year. (There is no official news of whether this figure has been realised.)

To do this, the three great training centres which I mentioned had to be expanded; so had the great technical schools at Denver, Rantoul and Belleville. Civilian flying schools had to play their part—another instance of the value of America's civil aviation progress. Nine civilian flying schools were turned over to the primary training of cadets—an experiment which met with excellent results and has now been increased, so that all army air cadets now get their primary training at converted civilian airfields.

Now for the Navy Air Service. At the beginning of 1940, the Navy Air Force had about five hundred good quality ship-based planes, and some hundreds of medium bombers of quite good quality. Altogether, the navy had about two thousand three hundred planes—though some of these were out of date and quite unsuited to modern warfare. The department also had about three thousand pilots.

Then the order went out to increase the size of the Navy Air Force to seven thousand planes.

Of the first five thousand planes ordered for its new programme, the Navy Air Force stipulated that about fifteen hundred were to be trainers, a hundred and fifty non-fighting

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planes, but all the rest—more than three thousand—were to be varying types of combat planes. About seven hundred were to be shipboard planes, operating from the carriers upon which America places such faith. Two hundred were to be long-range patrol bombers, while the rest were to be torpedo bombers and scout bombers, together with more than a thousand planes of different types—observation planes and scout planes—capable of being launched or catapulted from battleships.

That immediately gives you an idea of the one end steadfastly sought by the Navy Air Force—the power to hit, and hit hard wherever it may have to fight, the power to strike hard enough to make, in conjunction with the navy, a lethal corridor of water between the invader and the coastline of America.

These figures are by no means new—they were published quite early in 1941—so it is distinctly possible that this programme is well advanced, though no confirmation can be obtained—and you can never be sure, simply because the Navy Department might have waived claims in order to equip Britain or Russia.

But it has been stated officially that by the summer of 1941, the navy had actually twenty-four squadrons of carrier-based planes, aboard six carriers, averaging about eighteen planes per squadron—which makes a total of about five hundred planes, including spares.

Four of these squadrons consisted of torpedo bombers, eight of scout bombers, six fighters, six heavy bombers. When the two-ocean navy is finally completed it will have eighteen aircraft carriers, which will house about seventy-two squadrons, or about fifteen hundred planes of varying types. Twenty-five per cent. of them will be bombers of one type or another.

And remember, each of these aeroplanes will be operating from a mobile landing field far out to sea, thus increasing their range so that they may strike far from the actual shores of America. America's aircraft carriers can at one stroke increase the boundary line of the United States far into the oceans.

It should be pointed out here how America proposes to protect the planes on her aircraft carriers. As you know, aircraft carriers are not particularly well-armed, neither have they a great deal of fire-power.

America plans, in the event of war, to make each aircraft carrier an entirely independent unit capable of operations far from its own base—which is after all the logical use of the aircraft carrier; otherwise it would be cheaper and easier to operate from land.

For protection, each carrier has its own permanent war escort of cruisers. Several cruisers will escort each carrier, thus giving it mobility, safety and striking power both from the planes themselves, and from the guns of the cruisers.

Don't forget, though, that these aircraft carriers will be a long time in the building. They take years, even at the greatest American hustling rate. The last one of the present programme will not be ready before 1947—if then.

What, then, of the immediate future? Already, of course, America has aircraft carriers, but she is also converting certain types of merchant ships into auxiliary aircraft carriers. Like armed merchant cruisers, which also pack an air arm punch, they would be particularly useful in convoy work.

Most of the navy's actual fighting planes are ship-based, with the aircraft carriers stationed permanently in the Pacific and the Atlantic—more in the Pacific. Many of the large flying boat patrol planes are based on land, in a series of bases that stretch along both the coasts of the United States. But they are still part of the navy's air force, and come under the direct command of either the Atlantic or the Pacific Fleet.

I did not refer in detail to the types of planes used by the army for the simple reason that most of these are similar to the ones which Britain is receiving. So are many of the navy's—such as the Grumman which is now being used by the naval air arms of both this country and America.

But one or two naval planes should be mentioned, particularly the all metal single-seater Vought-Sikorsky fighter, which is powered by an eighteen hundred horse-power engine—a magnificent plane. The makers of this model have also produced a two-seater monoplane dive bomber, which has been sent in small numbers to this country, and is known here as the Chesapeake. As well as this, America's Navy Air Force uses Brewsters and Bermudas in large numbers, together with Curtiss and Douglas dive and torpedo bombers.

The Navy Air Force, as a matter of fact, has always experimented with new models—many of which have since proved of great value to us. They have paid particular attention to the development of aircraft carrier fighter planes possessing long-range capabilities without sacrificing fire-power or armour. The Navy department has also developed satisfactory self-sealing fuel and oil tanks, and has led the way in introducing magnesium in construction.

Now what about the manpower for this potential force? By the autumn of 1941, the number of fully trained pilots for the Naval Air Force had jumped to nearly six thousand, and estimates showed that a further seven thousand a year could be expected until the department had the best part of twenty thousand.

Naval air training differs from army air training. In the Army Air Corps, the pilot goes to four schools before he is finally passed out. In naval training, he only goes to two.

Would-be naval pilots receive preliminary elimination flight training at a number of Naval Air Reserve stations. From there successful candidates go to one of three great training centres—Pensacola, Jacksonville and Corpus Christi. July 1941 output figures for these three establishments were three hundred a month, two hundred a month, and three hundred a month respectively—a total of eight hundred pilots a month. It is from these three training centres that pilots are finally selected for work in one of the three specialised branches of sea-air warfare—patrol plane work, seaplanes operating from cruisers or battleships, or carrier type planes.

The training of all pilots for both branches of the air force is extremely good—another lesson which America has been quick to learn from the R.A.F.

Behind these two forces stands, almost ready, a great reserve of men—men trained for civilian flying by America's Civilian Pilot Training Programme, which was started at the beginning of 1941. This body quickly gave flight training courses to *more than forty thousand persons*, and by June 1941 another twenty thousand courses had been given.

Here you have a great pool of material ideally suited to the needs of war—young energetic men anxious to fly on every possible occasion. Indeed, in March 1941 it was stated that nearly five thousand men who had taken this civilian course had already gone into the air force of America. And the cost of training these men is so absurdly low—a pilot is trained for £75. And

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for all this airmindedness, the government has bought not a single plane, nor built a single airfield. Colleges, institutions, schools, have footed the bill.

These are the men who might well stop the gap if America were quickly plunged into war, in just the same way as our auxiliary 'week-end' fliers staved off the menace of the German Luftwaffe in the summer of 1940. Experience showed then that eager young men, anxious to learn, made brilliant pilots after only a little service polishing. The same high standard of efficiency can be expected of the United States civilian fliers.

And now we come to the last side of the air question. How is America situated for bases? Inside America, there will never be any trouble. Civilian aviation can help, and anyway, America has had a good start in the building of internal air fields and landing grounds and training schools.

Dickeson's map shows you how well she is situated as far as a protective ring of air bases in the Atlantic is concerned. Her chief bases acquired from Britain are at Newfoundland, Bermuda, the Bahamas, Jamaica, Antigua, Trinidad and British Guiana. Both the army and navy air forces are working hard on these bases, though some of them are not really ready yet.

Brazil needs better protection. A great combined naval and air base on the shoulder of Brazil would solve one of America's major headaches—it would link up with Trinidad, and so complete the chain that protects America's Atlantic seaboard.

The Panama is safe. Airfields at Tampa in Florida and Puerto Rico, each with a five-hundred mile arc of fighter radius, form an outer defence chain, while America has a number of air bases in the canal zone itself. Already half a billion dollars have been spent on perfecting the defences of the Panama. They include 16-inch shore batteries at each end, and great railroad guns which can speed across the isthmus to meet an attack from any direction.

The air bases there are excellent—but even more expenditure is going on. Better airfields, more anti-aircraft guns to prevent a possible bombardment, are being constructed hurriedly. For it must never be forgotten that one stick of well-directed bombs might cripple the canal for months, and so lock up one part of the American navy in the wrong ocean. Though this is a matter

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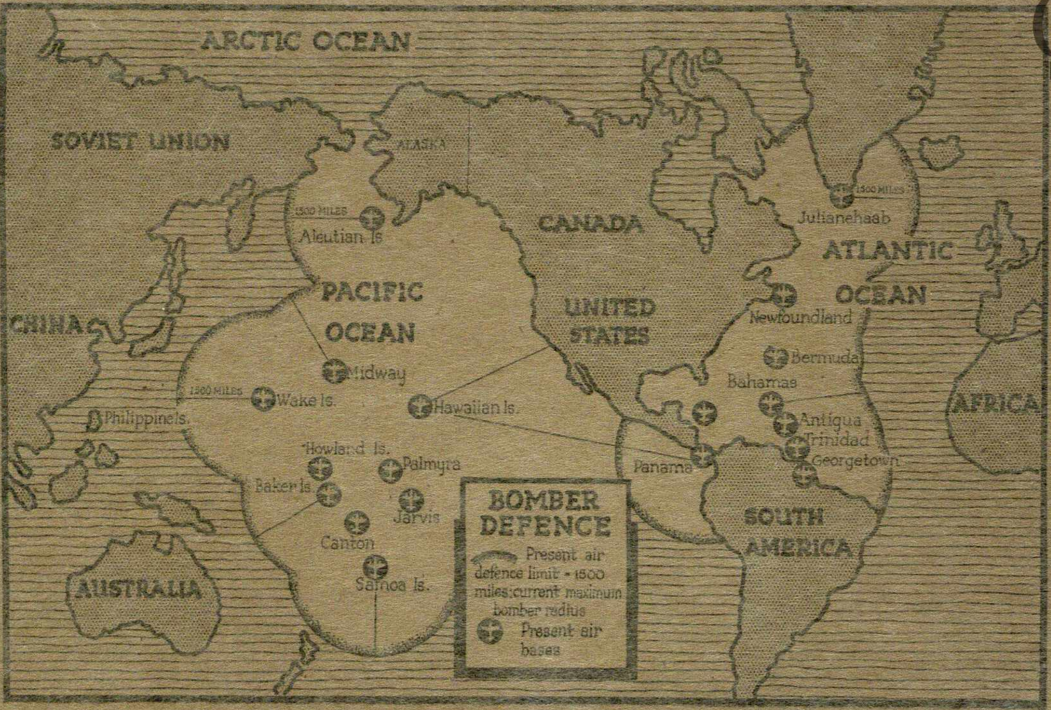
BOMBER DEFENCE
Present air defence limit - 1500 miles: current maximum bomber radius
Present air bases
ARCTIC OCEAN
SOVIET UNION
ALASKA
CANADA
1500 MILES
Aleutian Is.
1500 MILES
Julianehaab
ATLANTIC OCEAN
PACIFIC OCEAN
CHINA
UNITED STATES
Newfoundland
Midway
Bermuda
1500 MILES
Wake Is.
Hawaiian Is.
Bahamas
Philippine Is.
Antigua
Trinidad
AFRICA
Howland Is.
Palmyra
Georgetown
Panama
Baker Is.
Jarvis
Canton
SOUTH AMERICA
AUSTRALIA
Samoa Is.

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which affects the navy, it is the air forces which have to prevent it. They are taking good care that it never will happen. By setting up airfields in the outlying islands, they have effectually prevented any enemy power from seizing them.

On the Pacific side, there is little danger to fear, though it has been suggested that American airfields on the Cocos Island and on the Galapagos Islands, which belong to Ecuador, would help. But in the Pacific generally, the Americans have nothing to worry about. They are well placed for bases, particularly in the Far East, and the urgent threat of air attack, anyway, is less dangerous than in the west, for Japan is by no means the air power that race would have us believe.

MEN BEHIND THE SCENES

The head of the United States Naval Air Force is Rear-Admiral Jack Towers, head of the Navy Bureau of Aeronautics, a man who has had thirty years of experienced naval flying and who still puts in about a hundred flying hours a year, most of them in big flying boats.

Towers climbed his own way up the ladder to become firstly a naval captain, and has grown up with the Air Service, seeing it progress from a small and unimportant part of the United States navy to the strength and effectiveness it occupies at present.

Twice his zeal and enthusiasm for the aerial side of naval warfare nearly cost him his career. Twice he was passed over for important appointments—a dangerous thing, for in America the man who is passed for promotion three times never gets any promotion at all.

Then suddenly, in 1939, he was lifted from captain to Rear-Admiral and given complete control of the Naval aeronautical strength. It is believed in Washington that Roosevelt himself, sensing the ever-growing need for greater sea-air preparations, had a hand in his appointment. Whoever made it, it was a good choice.

In practice Towers ranks above all other men in naval aerial warfare and strategy, though on the other hand it must not be forgotten that his department is only a part of the United States navy, so that really, in theory, Towers is only adviser on naval-air matters to his navy chief. Actually, the commanders of the fleet air forces always report to their respective fleet commanders and only one of these—King, of the Atlantic—is an airman. In practice, fortunately, Towers is allowed to do pretty much what he likes.

The head of the Army Air Forces is General George H. Brett, though extremely important is General Arnold, Deputy Chief of Staff, who visited Britain in 1941 to see for himself what the Royal Air Force were doing.

He is a real air pioneer—he was actually taught to fly by those beginners in the air, the Wright Brothers, at Dayton, Ohio. In 1912, he became front-page news all over the world by flying thirty miles round Washington in a forty-horse-power engine aeroplane with a rattling chain and a sprocket. When he landed, the strain had been so great that he collapsed. True to American tradition, he received a silver cup to help him to recover.

Now he always pilots his own Lockheed plane. He has always urged the need for a separate air force—he supported General Mitchell, who urged the need so strongly that he got a court martial instead.

Arnold was probably behind the announcement in the summer of 1941 that the Army Air Corps and its separately commanded striking arm—the General Headquarters Air Force—have been grouped into a unified command. He exerts great influence behind the scenes as far as co-operation between army and air power is concerned.

THE SPIRIT IS WILLING . . .

So we come to the end of our analysis of the strength of the United States, both as a fighting nation and a productive nation. So we can draw our conclusions, can decide for ourselves whether America is in a position to wage total warfare if she should so desire.

All the chapters of this book link up. The strength and strategy of the navy, for instance, are tied up immediately with America's urgent need for that vital raw material of warfare, rubber. The policies of her armed forces on land can only be

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determined by the number of guns and shells and tanks which are produced from the clanking roar of American factories. The policies of the air corps and naval air service depend on the bauxite that rests in the good earth, and the speed with which this can be turned into aluminium, to be in turn transformed into airframes for giant bombers or lightning fighters. Everything ties up. Everything is all part of the one great problem of total warfare.

That, of course, is the secret of Germany's success. While America and Britain have always been nations prepared to go to war, Germany has always been prepared *for* war.

But America shares with Britain its own secret of success; something which is reflected in every figure in this book—something impossible to analyse. The spirit of the people.

In 1939 when we went to war with Germany, we were ill-equipped, badly prepared, with nothing much but hope, high hearts and a few comic songs. Yet somehow, despite the most fearsome blunders and setbacks, we managed, by the skin of our teeth, to survive. Something made us—and, oddly enough in this mechanised age, in this decade of infernal war machines, this counts. The human element transcends everything. The spirit and the will to win made us bridge the gap. And I, for one, cannot believe that there is any difference in the spirit of Britain and America. The Americans are luckier than we were. They have a certain strength, certain equipment, and have been able to study war objectively, and learn—and more, *apply*—the lesson of mechanised warfare. Behind all this, there is the spirit of America—as great a spirit as that which Britain has inherited down the corridors of time. You cannot analyse that. Hitler certainly never did.

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